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Snowy Monaro Regional Council

Bombala Region Softwoods Industry Bushfire Recovery Study

18 December 2020

PREFACE

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The report contains our assessment of the impact of the 2019-20 Black Summer Bushfires on the Bombala region softwoods forest industry.

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We trust our report is useful and we would be pleased to provide any future assistance if required.

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GLOSSARY OF TERMS

ABARES	Australian Bureau of Agricultural and Resource Economics & Sciences
AKD	Associated Kiln Driers – Australia's largest softwood sawmillers
ANWE	Allied Natural Wood Exports
%	Percent
BDMt	Bone dry metric tonne
BDMt/a	Bone dry metric tonne per annum
CLT	Cross Laminated Timber – essentially glued timber panels
ENGOs	Environmental non-government organisations
GDP	Gross domestic product
GFC	Global Financial Crisis
GFP	Global Forest Partners – parent of Snowy Mountains Forests
GMt	Green metric tonnes
GMt/a	Green metric tonne per annum
GTRPC	Green Triangle Regional Plantations Committee
ha	hectares
km	Kilometres
LVL	Laminated Veneer Lumber – thick plywood
m	Metres
m^3	Cubic metres
m^3/a	Cubic metres per annum
m^3/ha	Cubic metres per hectare
$m^3/ha/a$	Cubic metres per hectare per annum
MAI	Mean annual increment
MGP	Machine Graded Pine
MIS	Managed investment scheme
RBA	Reserve Bank of Australia
SEFE	South East Fibre Exports (former name of ANWE)
TIMO	Timber Investment Management Organisation – e.g. GFP
WSA	Wood supply agreement

SUMMARY

The Bombala softwood plantations and associated industry are significant.

Margules Groome Consulting Pty Ltd (Margules Groome) estimates that the 47 thousand hectares of softwood plantation in the region of Bombala are worth between 250 and 300 million dollars. In addition, the investment in equipment to grow, protect, harvest and process the softwood plantations is over 160 million dollars. The annual output in sawn timber from Dongwha Australia, pulplogs delivered to Visy Industries in Tumut and for export at Eden, and residues processed by Straw Services and Mighty Mulch at Bombala is close to 100 million dollars.

The combined total capital investment in plantations and associated equipment and value of annual output is well over 500 million dollars. If investment in flow on and support businesses around Bombala and the softwood export facilities at Eden are considered, then the investment would be significantly higher.

The employment is also significant and Margules Groome has estimated that there are over 370 direct jobs in the softwood plantation industry, and this would result in a flow on effect of at least another 450 indirect jobs in businesses that service and/or rely on the Bombala softwood plantation industry in some way.

The annual harvest and woodflow varies as not all growers are working to the same sustainable harvest systems but before the fires this was between 550 thousand and 600 thousand cubic metres per annum.

The main products are sawn and treated timber mostly for heavy construction and landscaping works produced by Dongwha Australia. Other products include pulplogs that are trucked to the Visy pulpmill in Tumut and out of specification logs that are exported from Eden to China and some softwood chips which are also exported. Dongwha have also recently installed a biomass boiler to provide steam for their kilns which uses around 50 per cent of their sawdust with the remainder being sold into the horticultural market.

The residues are also important and Straw Services situated next to the sawmill produce a specialist product from wood shavings used by the poultry industry for bedding and Mighty Mulch processes and refines the pine bark for potting mix and compost.

The Black Summer bushfires in January this year impacted around 10 thousand hectares of softwood plantation in the Bombala and Bega Valley regions. This is the second time a major fire has impacted the softwood plantations at Bombala as 6 thousand hectares was lost in 1983.

Simple replacement cost of these two bushfire losses in current money terms would be at least 40 million dollars however the opportunity cost (future log value) of this loss is considerably higher and is estimated to be at least 100 to 120 million dollars.

Creating a valuable softwood plantation asset that is sustainable and renewable takes time. The first plantations were established nearly 100 years ago but construction of the new modern Dongwha sawmill did not happen until 2011 some 80 years after the first pines were planted. It is estimated that it will take at least

26 years for the Bombala plantations to return to their pre bushfire harvest potential. Creating such a valuable and renewable asset like a softwood (or hardwood) plantation requires vision and protection if it is to deliver lasting economic benefits to not only the local region of Bombala but also nationally.

Future demand for softwood sawn timber is likely to remain strong as the economy of Australia continues to grow. Australia is also a net importer of softwood sawn timber which is currently around 800 thousand cubic metres per year. In addition, the Asia Pacific region is also short of softwood and demand from China and other growing markets in our region is likely to remain strong and this is unlikely to change in the next 30 years due to the growth of both our domestic and export markets and the static supply of softwood.

Protecting the Bombala plantations from a future bushfire is critical and there is no single measure (i.e., aerial bombers) that will achieve this, rather it is a range of things done well and consistently. For example, strategic firebreaks combined with forest thinning and prescribed burning, a rapid response to new fires by skilled firefighters will provide the greatest chance to protect our landscape and communities in the future.

There are some aspects of bushfires that the Snowy Monaro Regional Council can control and others they cannot control like climate change and the hot summer weather.

Controllable factors include:

- Reducing flammable fuels in the landscape – prescribed burning of at least 8% of the forest area has been proven over 70 years in south west Western Australia to be the most cost-effective approach to protecting forests and communities from the damaging impacts of mega bushfires. [Note the Australian landscape has evolved with fire and without it, it degrades].
- Development of strategic firebreaks – in conjunction with prescribed burning developing strategic firebreaks potentially along roads can create both safety zones for firefighting but they can also be aesthetically pleasing and replicate how Aborigines managed the landscape for 60 thousand years.
- Fast detection and response – fires will occur in our landscape and the key to preventing mega bushfires is early detection (potentially utilising aircraft with smart detection technology and carrying a small load of retardant) and rapid response and access by firefighting agencies to quickly bring fires under control.
- Consistency of resources – there are too many examples of variable resources across different states and/or agencies for example communications like the Fires Near Me App does not work in Victoria and vice versa. There should be a national approach to firefighting so that all equipment, communications and firefighting systems are the same. Large property owners should also be considered to supplement the firefighting resources and be provided with personal protective equipment, basic

training, and access (ideally subsidised) to approved standard equipment like pumps, tanks and hose connections etc.

Despite the significant impact of the bushfires on Bombala and its community there are opportunities and challenges, but they are manageable with the support of all levels of government and some investment in protection measures.

Following discussions with industry and community members around Bombala Margules Groome provides the following recommendations to the Snowy Monaro Regional Council for their consideration.

Short Term Recommendations 1 to 5 years

1. Lobby for Dongwha wood supply – Dongwha is the major employer in Bombala with around 130 jobs and its business is under threat due to the inability of Forestry Corporation of NSW to supply the volume of sawlogs it needs to remain viable. There are some other options, but they are not secured and may need some Council assistance. The residue businesses like Straw Services and Mighty Mulch are reliant on Dongwha remaining viable.
2. Establish a South East Forestry Working Group – to improve communications between the Bombala and Eden forest industry and the Council. This would include issues such as transport infrastructure, planning guidelines for new plantations and fire protection and communications around the state border. This working group can develop a long-term forestry plan and there is logic in this group including Bega Valley and East Gippsland Shires and potentially Queanbeyan Palarang.
3. Lobby the Commonwealth Government for the South East region to become a Regional Forestry Hub – the south east region has been identified as a forest industry hub, but it has not been formally recognised by the Commonwealth Government. There are policy benefits which come with the creation of an industry hub such as carbon credits for commercial plantations. One project that a Hub could fund would be a region wide five-year Transport and Road Infrastructure Plan.
4. South East Forestry and Agriculture Land Use Plan – the development of softwood plantations by Willmott Forests in the late 1990's and early 2000's on cleared farmland was contentious and divided the community. Developing additional plantations will reignite these tensions unless there is a level of planning about where plantations should be established. Defining what is important to the local community and the industry will be important and where possible ensuring planning regulations do not create perverse outcomes. This plan should investigate the potential size of the plantation estate and should include Bega Valley Shire and new industry processing options such as a panel board plant.
5. Commit to Planet Ark's Wood Encouragement Policy –this program is about awareness of the value of wood as a renewable and healthy product for Council and the community to use.

6. Border Fire Management Committee – following the 1983 bushfires a Border Fire Management Committee was established to improve communications and planning across the Victorian and NSW state border. It appears that this committee diminished over time but given the losses experienced this summer, an effective border fire management committee is critical to protecting the plantations in the future.
7. TAFE NSW Forestry Training – finding skilled employees is a challenge that TAFE NSW has recognised, and they are hiring part time teachers to develop a VET Forestry Course and Council should work with them to ensure they have appropriate facilities like a refurbished Bombala Primary School.
8. Construct the Rail Trail from Bombala to Canberra – this rail trail will create diversity in the economy. It will also increase the amenity of Bombala to make it more attractive for forestry workers to come and live in the town, which is currently a challenge. Building the trail to the coast would make a significant tourist connection from the sea to the nation's capital.
9. Consider the development of a Council wide Circular Economy – the circular economy is based on zero waste and would require all industries to work together to determine how waste can be utilised or re-purposed rather than going to landfill. Paper and wood products are easily recycled they just need a cost-effective collection system.

Medium Term Recommendations 5 to 10 years

10. Plantation estate expansion – a slow and steady expansion of a plantation resource is generally more acceptable in terms of community acceptance, roading infrastructure and industry development than a massive increase in the plantation estate over a short period.
11. Biomass – is commonly used in Europe and Asia and increasing in its importance as one of the renewable energy options in Australia. Dongwha has surplus sawdust that could be utilised. In addition, there is an unquantified amount of stemwood in the softwood and hardwood plantations that remain after harvesting that could also be utilised for steam production for heating, especially public buildings like the hospital, Currawarna, the schools etc. Modern biomass heating systems are efficient and affordable and given the regions climate they would be ideal replacement for older style heating systems.
12. Upgrade the South East Forestry Plan – as part of the land use plan.

Long term recommendations 10 plus years

13. New Industry options – within 10 to 15 years the replanted plantations following the bushfire will be ready for first thinning which will present new processing opportunities. Ideally these should be considered within the context of the outlook for demand and the opportunity for a new processing plant in Bombala.

CONTENTS

1 INTRODUCTION

The Snowy Monaro Regional Council (the Council) recognises that forestry and wood processing is a significant employer within the Snowy Monaro region and is a major contributor to the economy, especially the town of Bombala. As a result, the Council wants to improve its understanding of how this industry functions within the region. Achieving a greater understanding allows the Council to articulate its value to the local community and increase their knowledge of the key local, regional, national and international factors influencing its success.

The 2020 bushfires had a severe impact on the forest industry within the Council area, particularly the Bombala region which is heavily reliant on the 47 thousand hectares of softwood plantations that are grown both within and nearby.

This is the second time that Bombala has suffered a major bushfire in its softwood plantations. In 1983 over 6 thousand hectares of plantations were lost when a bushfire came from Victoria and extensively damaged Bondi State Forest. Then in January 2020 approximately 10 thousand hectares were lost when a bushfire came from a similar direction in Victoria.

The Council has requested Margules Groome Consulting Pty Ltd (Margules Groome) to develop a report that responds to their local forest industry and stakeholder needs following these January bushfires.

The following report will examine the role the industry plays in the region, its contribution to the local economy, the supply chains and key markets for log products, future softwood supply and demand, employment and skills requirements, and areas where each tier of government could assist to make the industry viable and sustainable over the short, medium and long term.

Based on the research undertaken for this report and discussions with stakeholders, Margules Groome will provide the Council with a series of strategic recommendations for their consideration.

2 OVERVIEW OF AUSTRALIAN FORESTRY

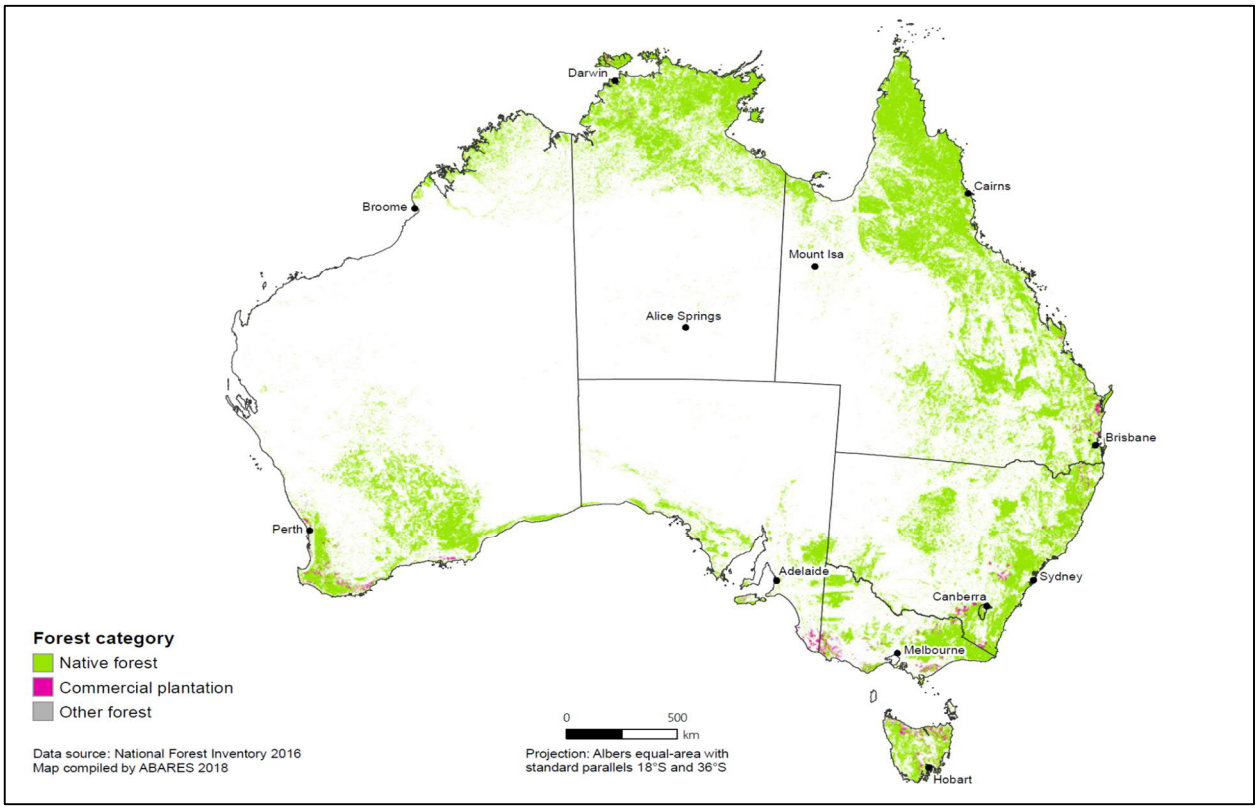
Australia has 134 million hectares of forest and according to FAO it is the seventh most forested country in the world. As a result, Australia has more forest per person than any other developed country except for Canada and possibly Russia. The average area of forest per person in Australia is over 5 hectares and the world average is around half a hectare (FAO,2011 & 2020).

Despite Australia's extensive forest area, the country has an annual net trade deficit in wood products of around two billion dollars. There is no economic argument for self-sufficiency in wood products it is a moral argument that Australia should not import timber products from forests that poorly managed.

The 134 million hectares contains nearly 2 million hectares of commercial plantations which are made up of 1.04 million hectares of softwood (mostly Radiata pine) and 884 thousand hectares of hardwood (mostly Blue Gum (Eucalyptus globulus) and Shining Gum (E nitens)).

The location of Australia's forests is shown below in Figure 2-1

Figure 2-1
Australia's 134 Million hectares of forest by category



Source: Australia's State of the Forests Report 2018

New South Wales has a total area of forests of 20.4 million hectares which includes 393 thousand hectares of softwood and hardwood plantations and 19.9 million hectares of natural forests managed under various tenures.

The privately owned natural forests in NSW is extensive at 7.4 million hectares while Forestry Corporation of NSW manages a natural forest estate of only 1.8 million

hectares. In addition, there is at least 5.5 million hectares of natural forests in National Parks and other reserves. The balance of the natural forest estate is on leasehold land and on other crown land which is approximately 5 million hectares (ABARES, AFWPS, 2020).

2.1 Historical Wood Products Supply

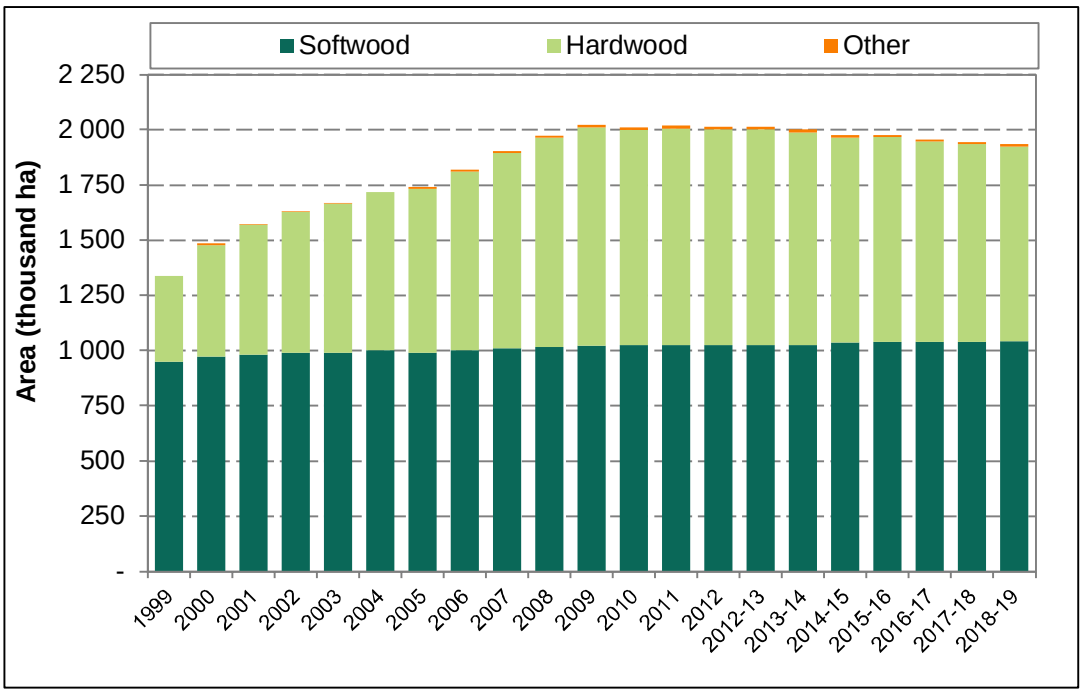
Since European settlement Australia has been an importer of wood products. There was significant and largely uncontrolled harvesting and clearing of Australia's natural forests throughout the 1800's and the early to mid-1900's. The demands of two World Wars and associated economic growth maintained the supply pressure for wood products from Australia's natural forests. The decade of the 1950's saw significant changes as more foresters were trained and the knowledge and experience with the silvicultural requirements of the unique eucalypt forests improved. The complex and difficult task for assessing the sustained yield of Australia's various forest types was also introduced into forest management planning.

It was also obvious around the late 1950's and early 1960's that Australia's natural forests would not be able to supply the nations' future demand and negotiations commenced between the state and federal government to expand the development of softwood plantations. These negotiations led to the Softwood Forestry Agreements Act in 1967 which provided Commonwealth loans to the States to increase their annual planting of softwoods. These loans were successful in boosting the national planting of softwoods from around 16 thousand hectares to 28 thousand hectares per annum. The Forestry Commission of New South Wales (now the Forestry Corporation of NSW) was a recipient of this loan funding which was used at Bombala and elsewhere. The aim of the loans was to increase the national softwood estate from around 250 thousand hectares in 1966 to 1.2 million hectares by the year 2000 to supply a population of 20 million assuming a per capita wood consumption rate of 1.4 cubic metres per annum. (Carron, 1985).

Despite their success these loans did not include any assistance to the private sector. This inadvertently created a reliance by the wood processing industry on the publicly owned plantations. The scheme was also controversial in that the state agencies were clearing areas of what was regarded as 'marginal' natural forest which was heavily criticised in the 1970s and as a result the loans were ceased in the early 1980's. Subsequently most state forest agencies banned the clearing of natural forests for softwood plantations by the late 1980's. However, the subsequent switch by the State forest agencies to the purchase of cleared agricultural land quickly became controversial. For example, the purchase in July 1986 by the Forestry Commission of Red Hill Station near Tumut was heavily criticised by local farmers as it had been one of the properties mentioned in Banjo Paterson's poem 'Kiley's Run'. By the early 1990's most state forest agencies had ceased their expansion of softwood plantations and the national estate has only increased very slowly since then. Figure 2-2 below provides the current national plantation area of softwood and hardwood. The significant increase in hardwood plantations was due to the planting by companies promoting Managed Investment

Schemes (MIS) in the mid 1990's and early 2000's. Following the global financial crisis (GFC) in 2009 most of these promoting companies became bankrupt and the plantations were sold to long term investors. The area of hardwood plantation is now declining as the timber investment management organisations (TIMO's) sell land to farmers after harvesting.

Figure 2-2:
Australia's Total Plantation Area 1999-2019

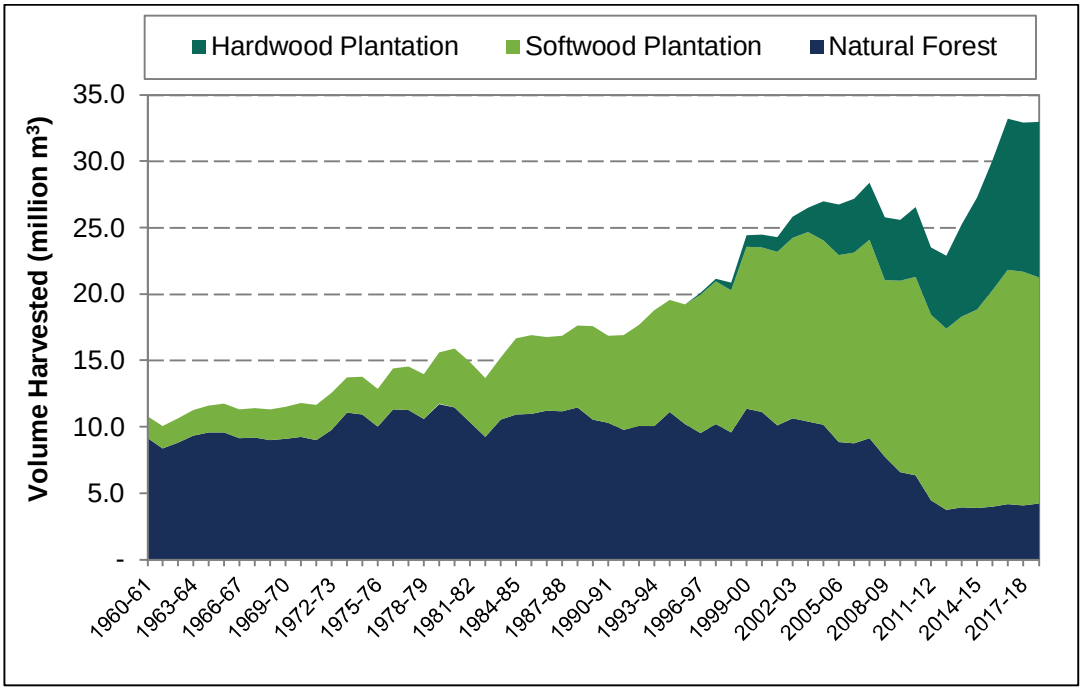


Source: ABARES

2.2 Wood Supply from Australian Forests

The history of wood supply in Australia began with harvesting natural forests and importing specialist timber products like Baltic pine, Oregon or Douglas Fir and rainforest hardwoods like Meranti, Ramen and Merbau. The domestic supply since 1960 is illustrated below in Figure 2-3 which shows the dominance of supply from natural forests until the mid-1990's when the maturing softwood plantations (as a direct result of the softwood loans) surpassed the natural forest harvest volumes in 1995/96. The current harvest of nearly 33 million cubic metres is a record but virtually all the hardwood plantations (shown below in dark green shading) are chipped and exported to China and Japan for papermaking.

Figure 2-3:
Australian Forest Harvest 1960-2019



Source: ABARES

Australia's apparent consumption according to ABARES is nearly 22 million cubic metres per annum or 0.87 cubic metres per person (ABARES, 2020).

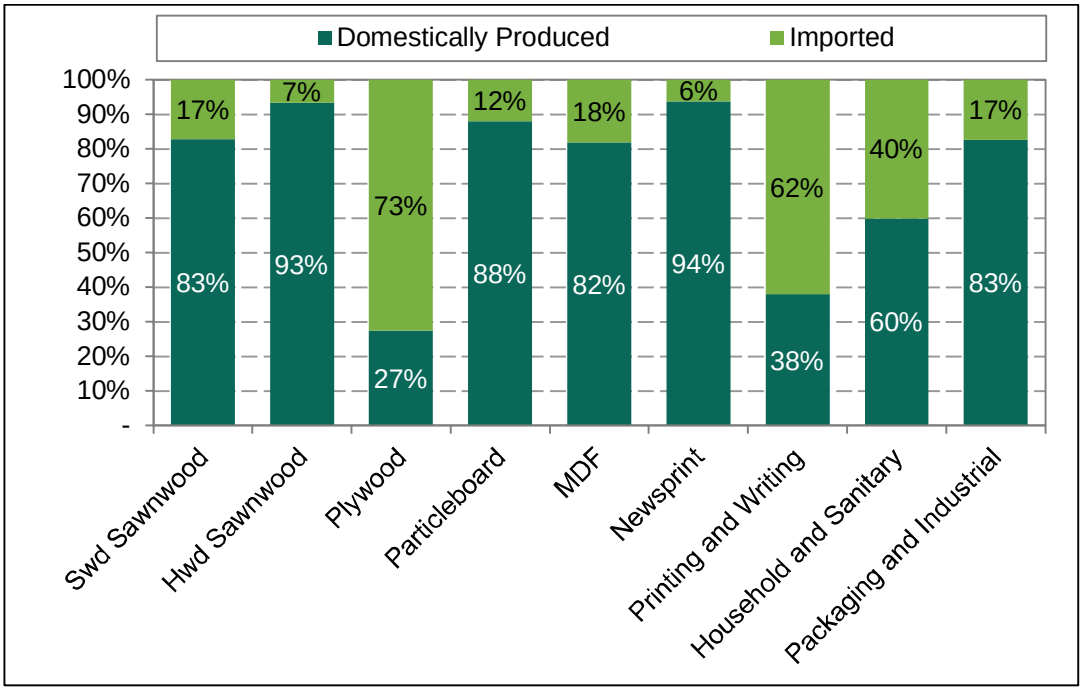
The total import bill is nearly 6 billion dollars and the most significant imports are paper and paper products which account for 2.2 billion dollars. Miscellaneous wood products are also significant accounting for about 1.5 billion dollars, and this includes products like manufactured flooring and furniture (ABARES, 2020).

The current balance in percentage terms between domestic production and imports is shown below in Figure 2-4.

Softwood sawntimber is also a major import (around 17%) and was nearly 800 thousand cubic metres in 2018-19 at a cost of over $400 million. Imports of softwood sawntimber have increased by 68% in the last 10 years and this will continue to rise until Australia increases its area of softwood plantations.

To put this import volume in perspective it would represent about 2 million cubic metres of logs assuming the sawn recovery was 40%. Two million cubic metres of logs would represent the sustainable harvest from approximately 130 thousand hectares of plantation assuming a mean annual increment (growth) of 15 cubic metres per annum.

Figure 2-4:
Balance of Domestic and Imported Wood Products 2019



Source: ABARES

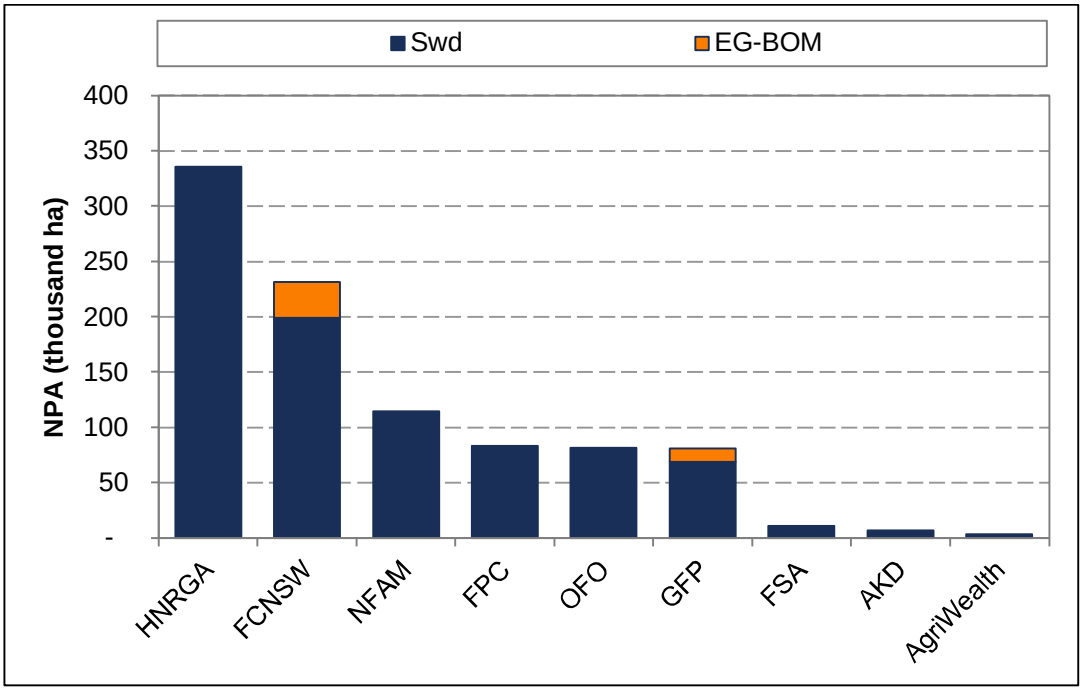
2.3 Softwood Plantations in Australia

As mentioned above Australia has approximately 1.04 million hectares of softwood plantations and 74% of these plantations are radiata pine (Pinus radiata D.Don) that grow in cool temperate regions of southern Australia and 15% are southern pines (Pinus elliotti, Pinus caribaea, Pinus hondurensis and hybrids) that are suited to growing in sub-tropical/tropical areas in Northern Australia.

The Forestry Corporation of NSW manages the largest softwood plantation estate in the state extending over 227 thousand hectares within the total softwood plantation estate of 306 thousand hectares.

The plantation areas within the Bombala region are shown below in Figure 2-5 as orange shading. There is another small plantation owner called Primary Securities which was formerly part of Willmott Forests and it is not shown in the graph due to its smaller scale (~2 thousand hectares).

Figure 2-5:
Australia's major softwood plantation owners (Net Planted Area in hectares)



Source: Margules Groome

The major Australian softwood growers listed above are as follows:

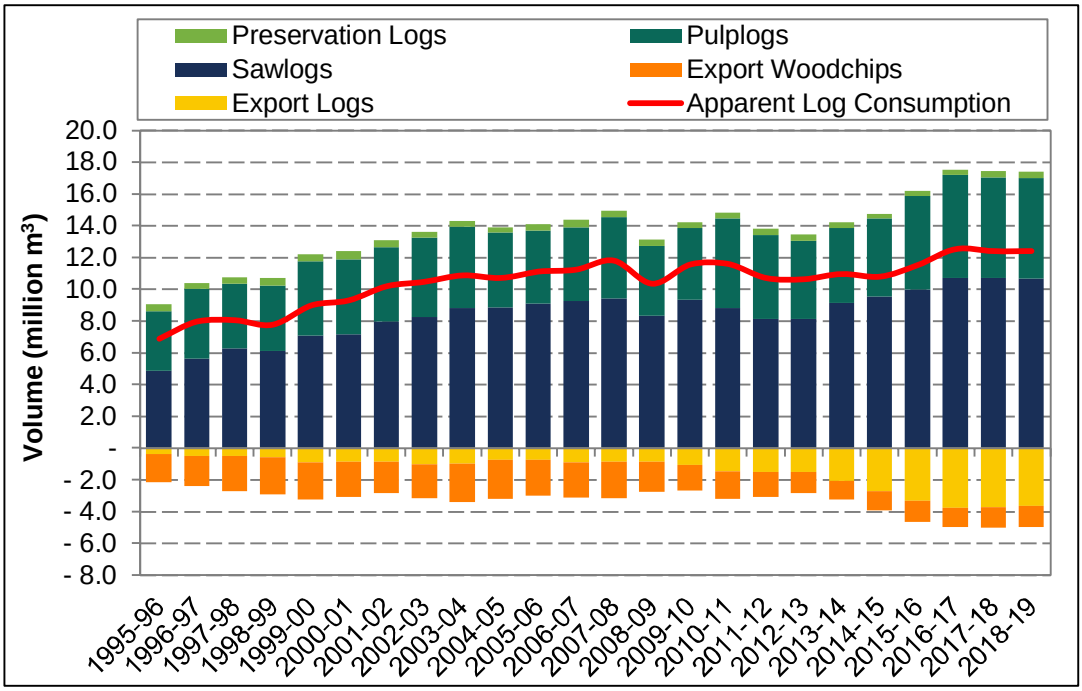
- HNRGA – Hancock Natural Resource Group Australia purchased the public plantation estates in Victoria and Queensland and the APM /Grand Ridge plantation estate in Victoria.
- FCNSW – Forestry Corporation of New South Wales (state forest agency).
- NFAM – New Forests Assets Management purchased the former Auspine and later Gunns plantation estate in south-east South Australia and south-west Victoria now known as Penola Plantations and the public plantation estate in Tasmania known as Taswood.
- FPC – Forest Products Commission of Western Australia (state forest agency).
- OFO – OneFortyOne Plantations – owns the former ForestrySA public plantation estate around Mount Gambier in south-east South Australia and south-west Victoria.
- GFP – Global Forest Partners purchased a range of private forests and own Snowy Mountains Forests, Southern Cross Forests and Hume Forests.
- FSA – ForestrySA estate in the Adelaide Hills (Mount Lofty Ranges) which was not privatised.
- AKD Softwoods – family owned sawmilling and plantation owning company.
- Agriwealth – a managed investment scheme forestry company.

2.4 The Domestic Softwood Market

The total Australian softwood plantation log harvest for the financial year 2018/19 was approximately 17.4 million cubic metres.

Domestic consumption of softwood logs is estimated to have increased at a compound annual growth rate of 2.5% since 2013-14, but this was a low point in the domestic demand cycle. Since 2014, domestic markets and trading conditions have improved and softwood log exports have also lifted, resulting in a strong recovery in log production which is shown below in (Figure 2-6).

Figure 2-6:
Australian Softwood Roundwood Log Harvest, Consumption and Trade



Source: ABARES, IHS GTA, Margules Groome

The breakdown of the annual harvest is around 10.7 million cubic metres of sawlogs and veneer logs (61%) and approximately 6.7 million cubic metres of pulplogs and preservation logs (39%). Plywood production capacity in Australia is limited, and total veneer log demand is estimated at approximately 0.4 million cubic metres per annum. The balance of the sawlog harvest is either utilised in domestic sawmills or exported. There are no imports of softwood logs.

The annual consumption of softwood pulplogs is estimated as follows:

- The pulp and paper industry (Visy, Australian Paper etc) 3.1 million m^3.
- The wood panel industry (particleboard, MDF etc) 1.0 million m^3.
- Log & Chip exports 2.2 million m^3.
- Preservation posts and poles 0.4 million cubic metres.

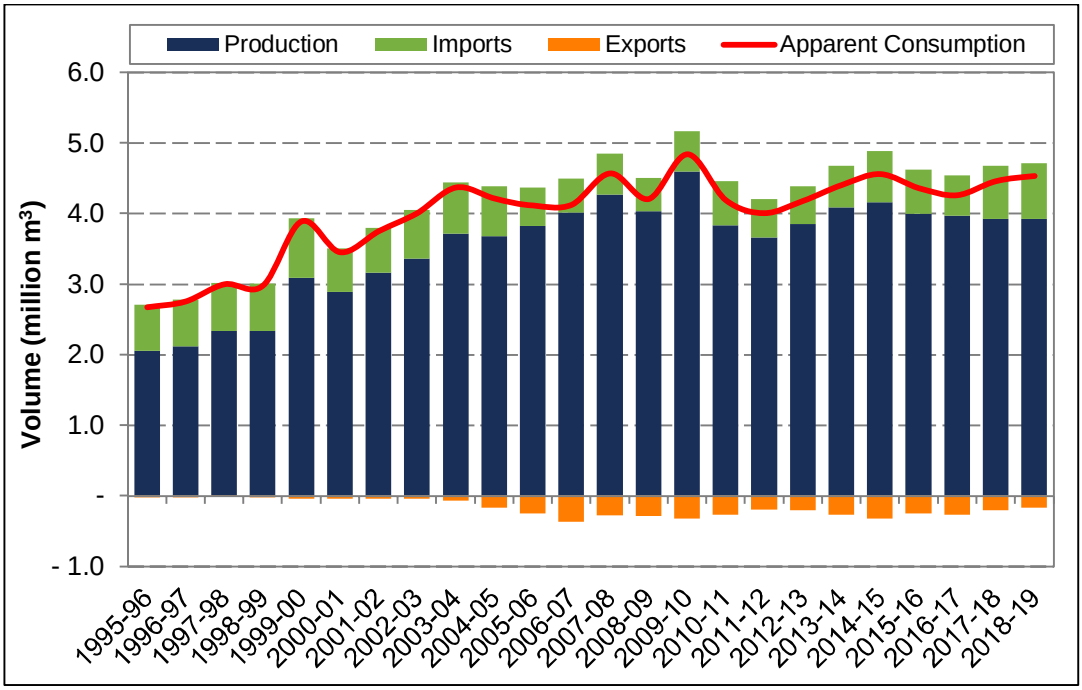
Nearly 100% of the export log trade is to China.

Increasing demand for softwood sawntimber since 2014 has been met by increasing domestic production and imports.

In the financial year 2019 local timber production again plateaued at similar levels to the previous two years as shown below (Figure 2-7). This was primarily due to the continuing strong demand in the local residential housing construction market. Although there is also evidence suggesting Australia's softwood sawntimber production is at full capacity owing to the lack of expansion of the softwood plantation estate since the early 1990's.

The strong demand for softwood sawntimber has been largely driven by historically low interest rates for housing loans, pent up demand from the previous decade of housing construction and less stringent lending criteria being applied by the banks to investors.

Figure 2-7:
Australian Softwood Sawntimber Production, Consumption, and Trade



Source: ABARES, Margules Groome

Evidence suggests that residential construction started to lose momentum in 2019 and has since developed into a cyclical decline ending the recent residential construction boom.

Softwood timber imports represented approximately 17 per cent of apparent consumption in 2019.

Most of the softwood sawntimber is imported from Central Europe, New Zealand and Canada.

2.5 Export log markets

The Asia-Pacific is a wood supply deficit region requiring imports to satisfy demand.

The main market for export logs from the Bombala region is from Twofold Bay at Eden and these markets often have a higher capacity to pay for logs than the local domestic sawmilling industry. However, export demand can be volatile due to variations in demand and foreign exchange rates.

The Asia-Pacific softwood log supply is driven by the:

- cost competitiveness of supply (production costs, exchange rates, ocean freight rates, etc.).
- availability of supply of suitable species and log qualities.
- tariff and non-tariff barriers.

The primary drivers of softwood demand in the Asia-Pacific region are:

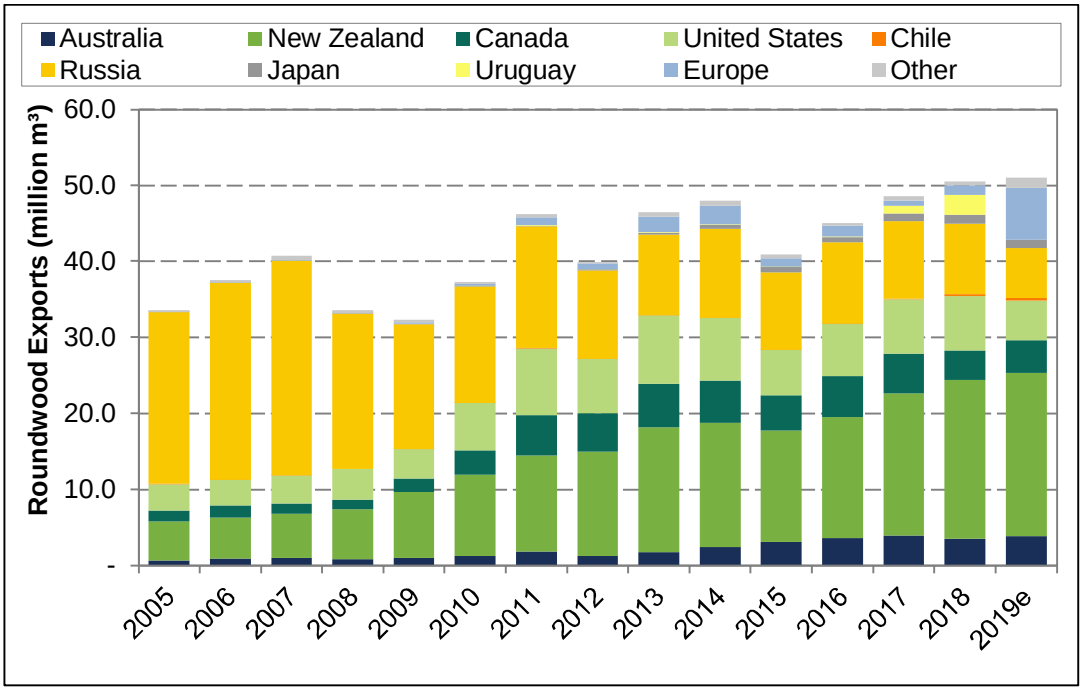
- Housing and commercial construction.
- Infrastructure development.
- Furniture, interior finishing/appearance timber demand.
- Manufacturing and consumer driven packaging demand.
- Trends in substitution

Given Asia's softwood supply deficit there is a robust export trade in roundwood logs into the region. Quantities traded are expected to peak at around 51.0 million cubic metres per annum in 2019, after rising steadily from a decline in 2015 following the previous peak in 2014.

There have been noticeable changes in the market share of exporting countries, with New Zealand overtaking Russia in 2012 as the dominant supplier to the region and now European nations (Germany, Czech Republic, Poland, France and others) sharply increasing their collective market share from 3% to approximately 13% in 2019. Much of this is due to the high level of tree decline due to insect attacks in Europe following the mild winters.

New Zealand still commands the highest market share of exports at an expected 42% in 2019. Russia and European countries have the next highest market share of exports at an expected 13% each, followed by the United States (approx. 10%), Canada (approx. 9%) and Australia (approx. 7%) which is shown below in (Figure 2-8).

Figure 2-8:
Major Softwood Log Exporting Countries Supplying the Asia-Pacific Region



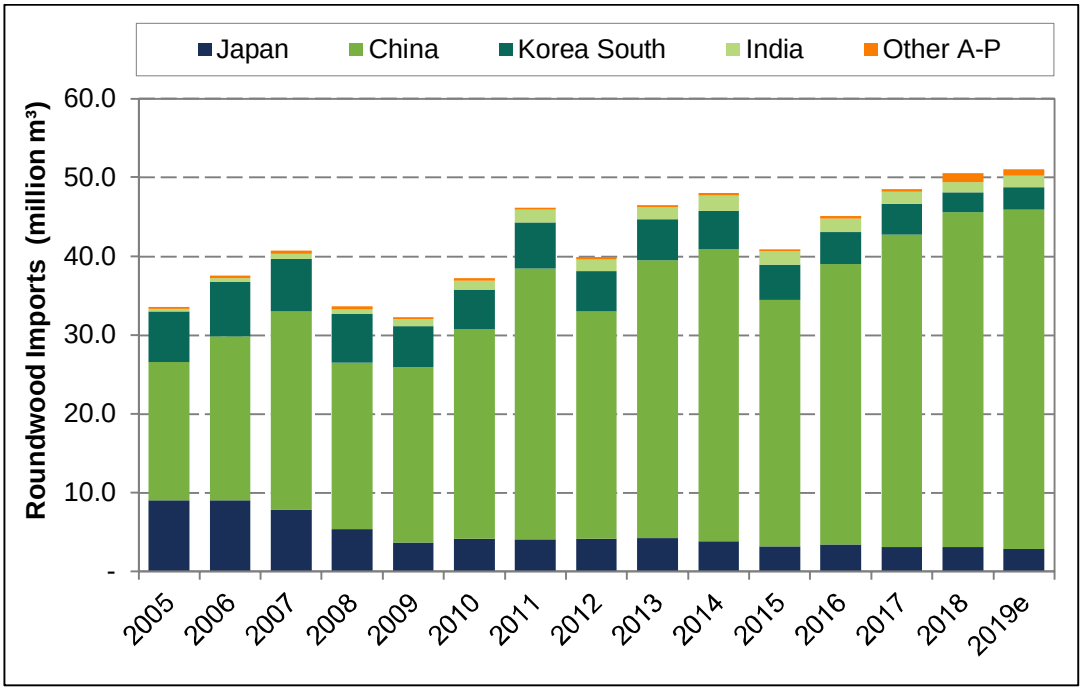
Source: IHS GTA, Margules Groome

The demand for softwood roundwood in the Asia-Pacific region in the last decade has been driven by the rapid economic growth of China.

China lacks sufficient domestic forest resources to meet its growing timber demand due to the expansion of the building and construction sector. In 2014, Chinese imports of softwood roundwood reached approximately 37.0 million cubic metres or 77% of total Asia-Pacific region imports.

While the volume decreased in 2015, a full recovery from 2016 has seen volumes reach an historical high of approximately 43 million cubic metres per annum, or around 84% of all Asia-Pacific softwood roundwood trade volume. In 2019. softwood roundwood trade with China slowed but has still increased over the last five years with a compound annual growth rate of 3.1 per cent per annum which is shown below in Figure 2-9.

Figure 2-9:
Major Softwood Log Importing Countries in the Asia-Pacific Region

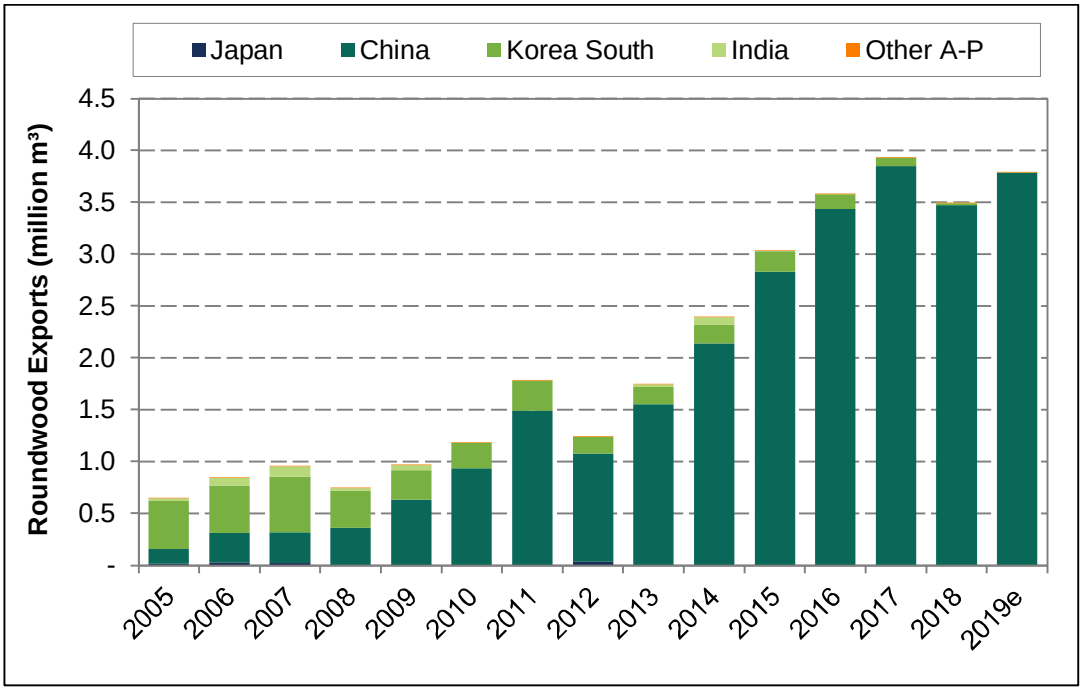


Source: IHS GTA, Margules Groome

2.5.1 Softwood Log Exports

Australian softwood roundwood log export volumes grew rapidly to 2017 but slowed in 2018. They are expected to re-bound in 2019 to 3.8 million cubic metres per annum, slightly down on the peak in 2017of 3.9 million cubic metres per annum. They have still grown at 9.6 per cent compound annual growth rate in the last 5 years. China is the dominant market with a 100% market share as shown below in Figure 2-10.

Figure 2-10:
Australian Softwood Log Exports to the Asia-Pacific Region



Source: IHS GTA, Margules Groome

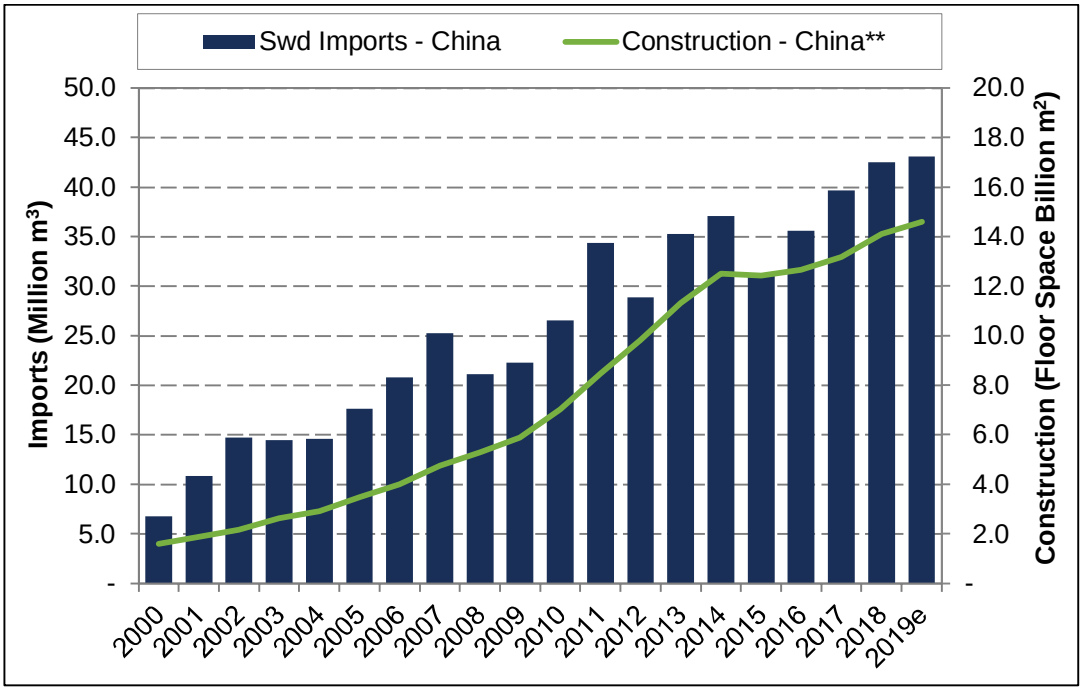
Margules Groome anticipates that Australian export growth will continue to plateau or even decline as domestic supplies become increasingly limited due to increasing demand and the substantial loss of softwood plantations during the 2019-20 bushfires. In addition, the recent proposed ban on log imports by China will reduce the volume of logs exported due to the uncertainty that this ban has created.

2.5.2 Chinese Demand and Supply

Chinese demand for softwood timber is derived from three industry segments; construction (which accounts for approximately 50% of the demand), packaging (around 15%) and the furniture manufacturing and appearance timbers (approximately 35%).

In the last decade China has experienced what some commentators have described as 'an over-construction binge' fuelled by ambitious government officials, endemic corruption and lax lending practices to fund projects. The result was a bubble period from 2011-14 where housing starts exceeded sales by up to 40%. The subsequent correction and slowing in the Chinese economy in the financial year 2014-15 resulted in lower manufacturing exports and a surplus of housing stock, particularly in tier 3 and 4 cities. Both negatively impacted the construction and packaging industry segments leading to a build-up of stocks along the supply chain, reduced demand for lower grade softwood roundwood and timber and reduced import volumes and prices (Figure 2-11). Incidentally, the furniture manufacturing and appearance timbers segment was not as affected and demand for European timber, Russian red pine and New Zealand pruned pine logs remained positive.

Figure 2-11:
Chinese Softwood Roundwood Log Imports and Construction



[**] Floor Space of Buildings Under Construction.

Source: National Bureau of Statistics China (NBSC), IHS GTA, Margules Groome

Margules Groome believe the long-term fundamentals supporting Chinese wood demand remain positive.

The strong urbanisation trend remains a key driver with approximately 13 million people expected to migrate to the cities annually requiring an additional 40-50 million new homes as the Chinese government seeks to reach a 70% urbanisation rate by 2030. GDP per capita has also increased at approximately 6 per cent per annum[1] increasing spending capacity and demand for larger, better quality housing; especially in the tier 1 cities such as Shanghai and Beijing.

The Chinese government has also continued large scale protection of their native forests from harvesting (reducing the already inadequate domestic log supplies), reduced tariffs on imported logs and changed the regulations to allow buildings to be designed and constructed using imported softwood; which will drive demand for softwood imports into the future.

On the supply side the Chinese market has proven to be dynamic and willing to diversify and expand supply sources, including from distances that were previously thought to be uneconomic, to meet demand (e.g. Uruguay and Brazil). But it is also opportunistic as evidenced by:

- The decline in exports from the US in 2019 in the wake of the US-China trade war, the impacts of which:
  - Have weakened the RMB against the USD making US logs more expensive.

[1] Consensus Economics, February 2020.

- Seen tariffs of 5% to 25% applied to log exports from the US, paid by Chinese importers.
- Ensured greater market uncertainty which has in turn led to more conservative purchasing and investment decisions regarding US imports.

- The massive lift in imports from Germany in 2019 taking advantage of:
  - The large quantities of discounted logs now available from production forests in Europe (Germany, Czech Republic, Poland, France and others European countries) impacted by windstorms, drought and beetle infestations.
  - The ability to backhaul logs from Germany and Eastern Europe to China by rail more cheaply and in considerably less time than ocean freight because of the 'Belt and Road' initiative creating and improving overland freight links with the support of Chinese government subsidies.

The combination of new supply sources from Europe and a slowing construction market have placed strong downward pressure on prices in early 2020.

On top of this challenging situation for importers, the outbreak of COVID-19 and the ensuing measures to control the spread of the virus in China and beyond have construed to make the situation much worse. Port log inventories have spiked by over 50% in January 2020 as logs remain stranded at the ports with wood processing industries stopping work. Consequently, prices dropped again. After peaking at approximately 7.1 million m^3 in March, log stocks at Chinese ports dropped to approximately 5.3 million m^3 by the end of April as the Chinese economy emerged and ramped up after the initial outbreak of COVID-19 and demand returned.

The current situation with regards the Chinese log market is highly uncertain.

The key risks are:

- A second wave of COVID-19 pandemic affecting demand and/or supply.
- The continued flow of discounted logs from beetle-killed forests from Europe.
- Any recovery in the volume of Southern Yellow Pine imports from the south-east US as prices return to economic levels.
- An increase in trade tensions between China and the US as the latter seeks to place blame for the pandemic on China.
- The ability of China to provide the needed stimulus for an economic recovery due to increasing levels of debt.
- Higher prices encouraging increased volumes from suppliers leading to imports exceeding demand.

None of the market intelligence suggests positive news.

The current market slowdown and subsequent accumulation of radiata pine log inventories at Chinese ports has reduced Australian log exports to China in the March quarter 2020 by around 35% which is good news for Australian sawmills.

Margules Groome has taken the view that the situation will take at least 12-18 months to resolve and that Australia's export log markets will remain at reduced levels to at least the end of financial year 2021.

Two factors will help mitigate this:

- The apparent market preference for Australian grown radiata pine logs over New Zealand grown radiata pine logs of the same grade.
- The lower AUD making radiata pine logs less expensive for Chinese sawmills than North American softwood species.

While the real estate demand is likely to soften over the next decade, China could potentially use incremental increases of softwood log and timber imports overall. Chinese softwood roundwood demand will outstrip supply in the medium term meaning the Asia-Pacific region will continue to be a wood supply deficit area with strong supply-demand fundamentals. Margules Groome expects the Asia-Pacific softwood supply/demand balance to further tighten over the next decade as the ability of the major supply regions within the Asia-Pacific to expand production to meet this increasing demand is limited. This tightening of the supply/demand balance will underpin stable volumes traded and increasing prices.

This should assist domestic sawmills as the export market is likely to remain volatile.

Of the other key softwood supply deficit countries in the Asia-Pacific region only India has the potential to significantly increase demand. Japan remains a slowly declining market while South Korea is relatively stable.

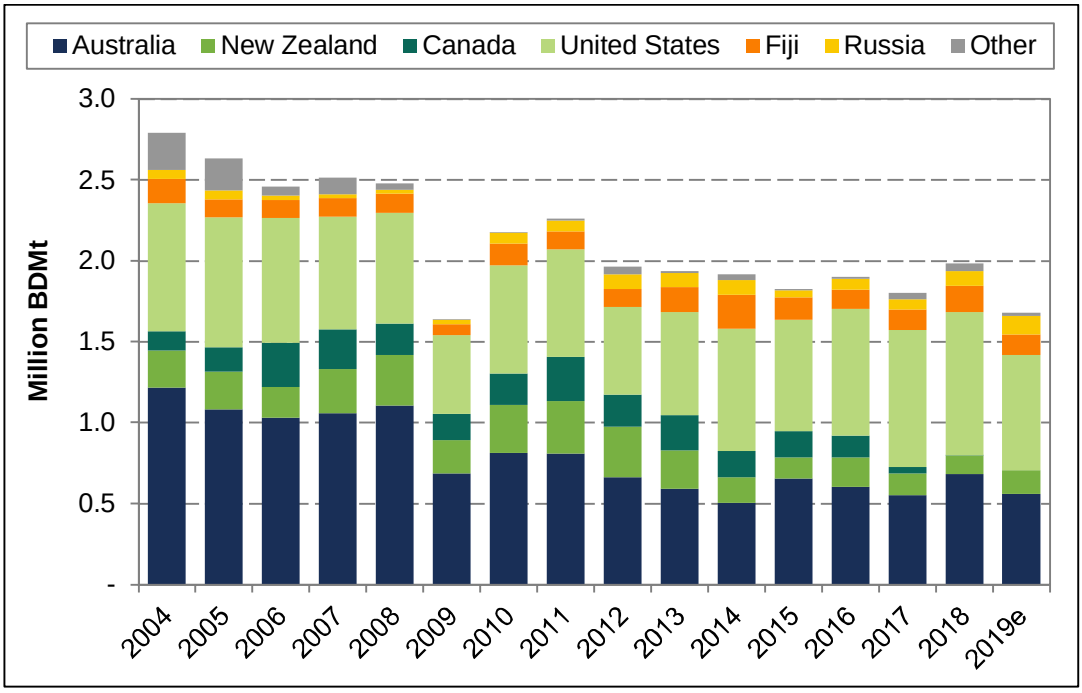
2.6 Export Woodchip Markets

Whilst the Asia-Pacific is expected to remain a major wood products deficit region with continuing growth in the woodchip trade, much of this is expected to be in hardwood woodchips rather than softwood woodchips.

Softwood woodchip trade volumes within the Asia-Pacific region are expected to be approximately 1.7 million bone dry metric tonnes (BDMt) in calendar year 2019, a decrease of approximately 15% from 2018. A bone dry metric tonne is the wood weight without the water which is around 50% of the weight resulting in roughly two green metric tonnes of wood to one bone dry metric tonne.

Demand growth has been a negative 2.6 per cent compound annual growth rate over the last 5 years. The United States Pacific North-west (US PNW) and Australia are still the dominant exporters of softwood woodchip in the Asia-Pacific being 42% and 33% of the market respectively in 2019. The next largest is New Zealand (9%), Fiji (8%) and Russia (7%) as shown below in Figure 2-12.

Figure 2-12:
Major Softwood Woodchip Exporting Countries Supplying the Asia-Pacific Region



Source: IHS GTA, Margules Groome

Most of the recent softwood woodchip traded in the Asia-Pacific region has come from sawmill residues.

Post the global financial crisis (GFC) the Asia-Pacific softwood roundwood trade in pulplogs (KIS/P18 and Pulp/P10 grades) has proven to be more lucrative than the woodchip trade. This has led to some product substitution with pulplogs being exported as roundwood from forests rather than being converted to woodchips for export.

2.6.1 Softwood Woodchip Demand

Historically, Japan has been, by far, the largest importer of softwood woodchips in the Asia-Pacific region, and its pulp and paper industry the main driver of demand. Up until 2008 virtually all softwood woodchips traded into the region were consumed by Japan's pulp and paper manufacturing industries.

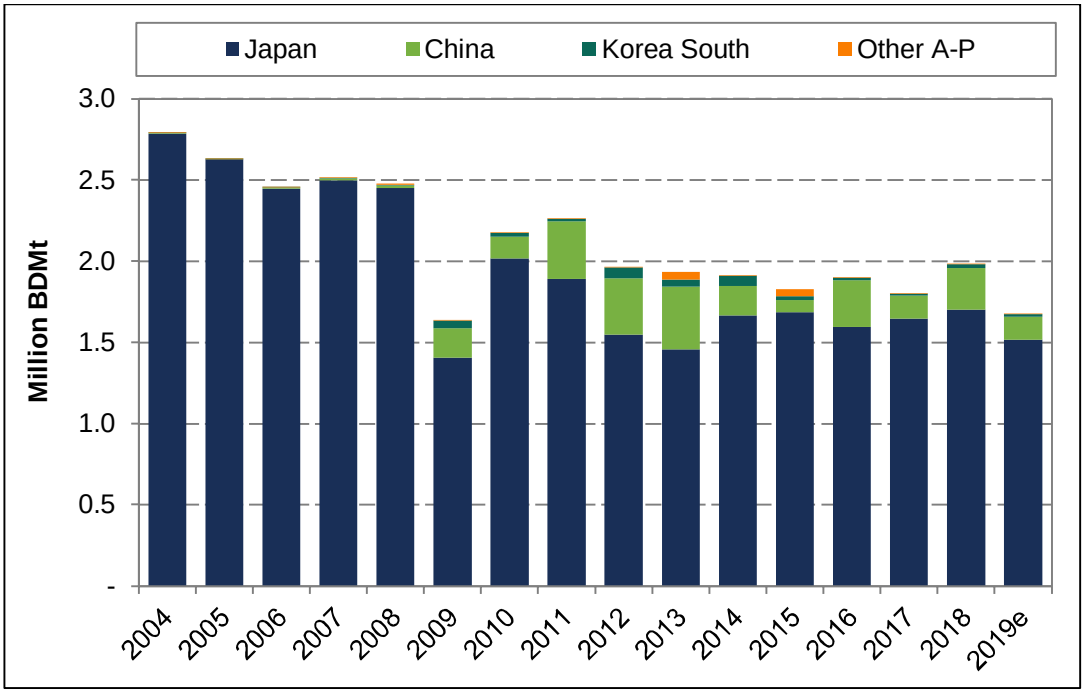
Japan's pulp and paper manufacturing industry was severely affected by the GFC, with 2009 imports of softwood woodchips dropping 43% compared to the previous year. Part of Japan's pulp and paper production capacity was permanently closed as a result. This sharp decline in 2009 partially masked a long-term declining trend in Japanese softwood woodchip imports

Since 2008, China has emerged as a significant importer of softwood woodchips. As Japan's softwood woodchip demand has decreased, China's demand has increased to supply a growing pulp and paper industry there. In 2013 Japan's share of the Asia-Pacific softwood woodchip market declined to an historic low of 75%, while China's share increased to 20%. Over the following 2 years (2014 and 2015) this trend was dramatically reversed, and Chinese demand dropped by 80%. This

dramatic change coincided with the onset of significant problems in the Chinese economy and relatively high softwood woodchip prices which may have been factors in one of the major users of imported softwood woodchip, Guangxi Phoenix, ceasing operations in 2015. They had imported in the order of 300 000 BDMt per annum of softwood woodchip prior to ceasing operations.

Although trade has recovered somewhat from the collapse in demand in 2009, overall demand levels have not returned to pre-2008 levels and it is unlikely that they will. Figure 2-13 shows the major softwood woodchip importing countries in Asia Pacific from 2004 until 2019.

Figure 2-13:
Major Softwood Woodchip Importing Countries in the Asia-Pacific Region

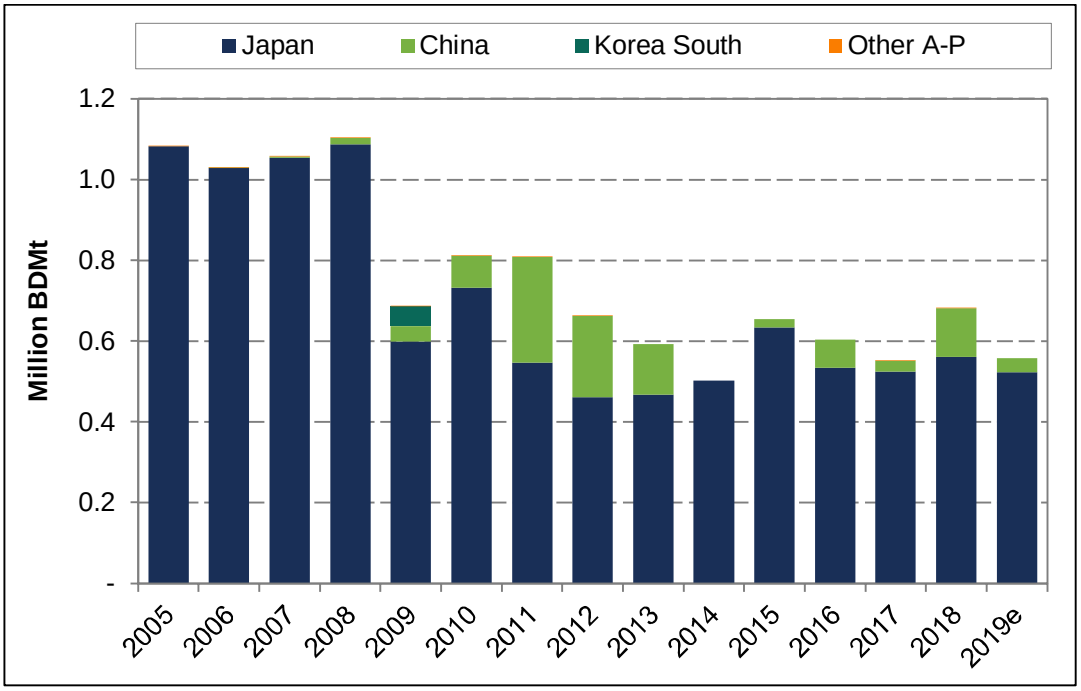


Source: IHS GTA, Margules Groome

In the future, it appears that there will be expanding markets for softwood woodchip imports as a source of biomass from energy providers in Japan for pellet production and/or feedstock for burning to produce electricity in power stations. This change will be driven by the need to reduce carbon emissions from power generation, biomass being a carbon neutral generation source and less reliance on nuclear power in the wake of the Fukushima-Daiichi nuclear disaster.

Softwood woodchip exports from Australia were approximately 690 thousand BDMt (approximately equal to 1.6 million green metric tonnes (GMt)) in 2019, a similar level to the last 5-years as shown below Figure 2-14.

Figure 2-14:
Australian Exports of Softwood Woodchips to the Asia-Pacific Region



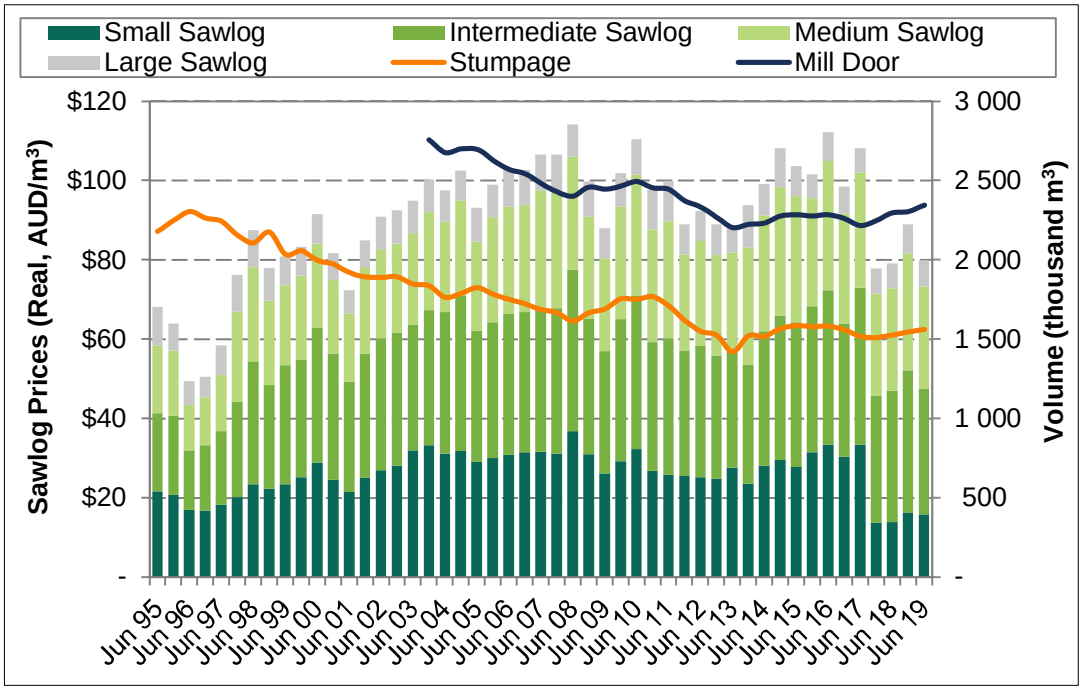
Source: IHS GTA, Margules Groome

2.7 Sawlog Prices

The Australian forest products industry is characterised by long-term wood supply agreements (WSA's) of up to 20 years between the major forest growers and wood products manufacturers (processors), with stable price review mechanisms.

It is rare for roundwood to be sold on a free-market basis and unlike every other agricultural commodity there is little publicly available information on log prices however, most growers and processors contribute to an index which provides an indication of stumpage as shown below in (Figure 2-15).

Figure 2-15:
Australian Domestic Softwood Sawlog Price Trend



Source: KPMG APLPI, Margules Groome

The domestic softwood sawlog market is primarily driven by domestic sawn timber demand, which in turn is highly dependent on Australian housing construction activity. Australian housing construction activity is in turn influenced by prevailing interest rates to finance investment in housing and associated infrastructure and the health of the wider economy.

The price indexation mechanisms for wood supply agreements are often heavily weighted to changes in the MGP10 grade of structural softwood timber prices. MGP refers to machine graded pine which is a mechanical stiffness test for softwood sawntimber. The number 10 refers to minimum threshold for stiffness of 10 thousand megapascals. MGP12 means a minimum stiffness of 12 thousand megapascals which means it is stiffer to bend.

Occasionally the old F rating system is used which is normally (not always) referring to a visual strength test (assessing grain and knots). The standard structural grade is F7.

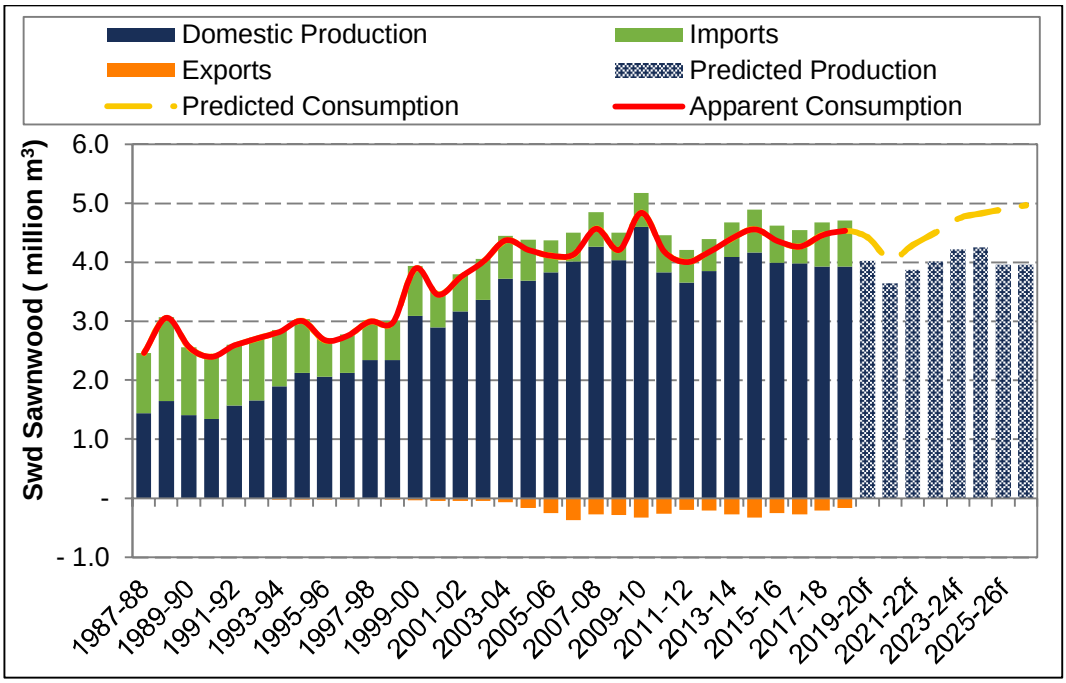
Structural softwood timber prices also trend with housing starts and they are reflective of anticipated and actual timber demand (apparent consumption).

If population growth and timber consumption per capita does not materially change (i.e. no product substitution) then it is likely that domestic production will remain at full capacity, with the consumption gap being supplied by imported timber (Figure 2-16). Where supply has been affected by the bushfires, the situation is even more constrained with additional imports the only solution.

Australia's population is forecast to grow at a healthy 1.5-1.7%/a[2], with GDP growth tipped to continue to remain slow, but stable, at ~2.0%[3] and inflation remaining below the RBA's target range at 1.8-2.0%[3] in the longer term post-COVID-19, downward pressure will continue to be placed on the AUD.

A lower AUD will increase the competitiveness of Australian roundwood log exports providing price competition to domestic buyers in those regions that are exposed to the log export market such as Bombala. The RBA's decision to lower the cash rate to a new historic low of 0.25%/a with no hint of any future rises, will allow interest rates to remain at least constant with no pressure to increase in the short-term[3]. This will reduce the risk of a sudden drop in demand for softwood timber and sawlogs.

Figure 2-16:
Australia's Past and Predicted Consumption of Softwood Timber



Source: HIA, ABS, ABARES, Consensus Economics, RBA, Margules Groome

[2] ABS.
[3] Consensus Economics.

3 BOMBALA SOFTWOOD INDUSTRY

3.1 Development of the softwood plantation estate

Bombala has a long history in natural forest management and plantation forest development. As a result, the town has a similar history of wood products processing including both hardwood and softwood sawmilling.

The first softwood plantations were planted in 1927 in Bondi and Nalbaugh State Forests and like many other regions in NSW they were developed as a source of employment during the Depression of the 1930's and even utilised prison labour based from Bondi State Forest.

The plantation estate expanded significantly in the late 1960's through to the late 1980's by two means. Firstly, the Forestry Commission of NSW expanded planting in Bondi and Coolangubra State Forests utilising the funds provided by the Commonwealth and State government under the Softwood Forestry Agreement Loans. The concept of these loans was not only to expand the softwood plantation estate but was also seen as supporting decentralisation which was popular in the 1960's.

The second expansion came from a private entity called Kapunda Development Company P/L which developed around 14 thousand hectares of softwood plantations between 1966 and 1988 on essentially abandoned and/or marginal farmland around Bombala and in the Bega Valley. Kapunda was owned by the Soriano family based in the Philippines and their plantations were purchased by the Forestry Commission in the late 1980's.

The next expansion of softwood plantations came from Willmott Forests, a managed investment scheme (MIS) operator, who established approximately 10 thousand hectares of softwood plantations from the mid to late 1980's to 2008. Willmott Forests collapsed financially in 2010 and most of their plantation assets were purchased by Global Forest Partners (locally referred to as GFP). GFP is what is known as a TIMO a Timber Investment Management Organisation and the manage investments in forests on behalf of pension or superannuation funds. Different funds invest in different forest assets and hence the different names such as Snowy and Hume Forests. Primary Securities purchased, or took control of, the remaining older Willmott Forests plantations planted between 1995-1999 which totals around 2 thousand hectares.

The total softwood plantation area in the Bombala, Bega Valley and East Gippsland wood supply region is approximately 47 thousand hectares.

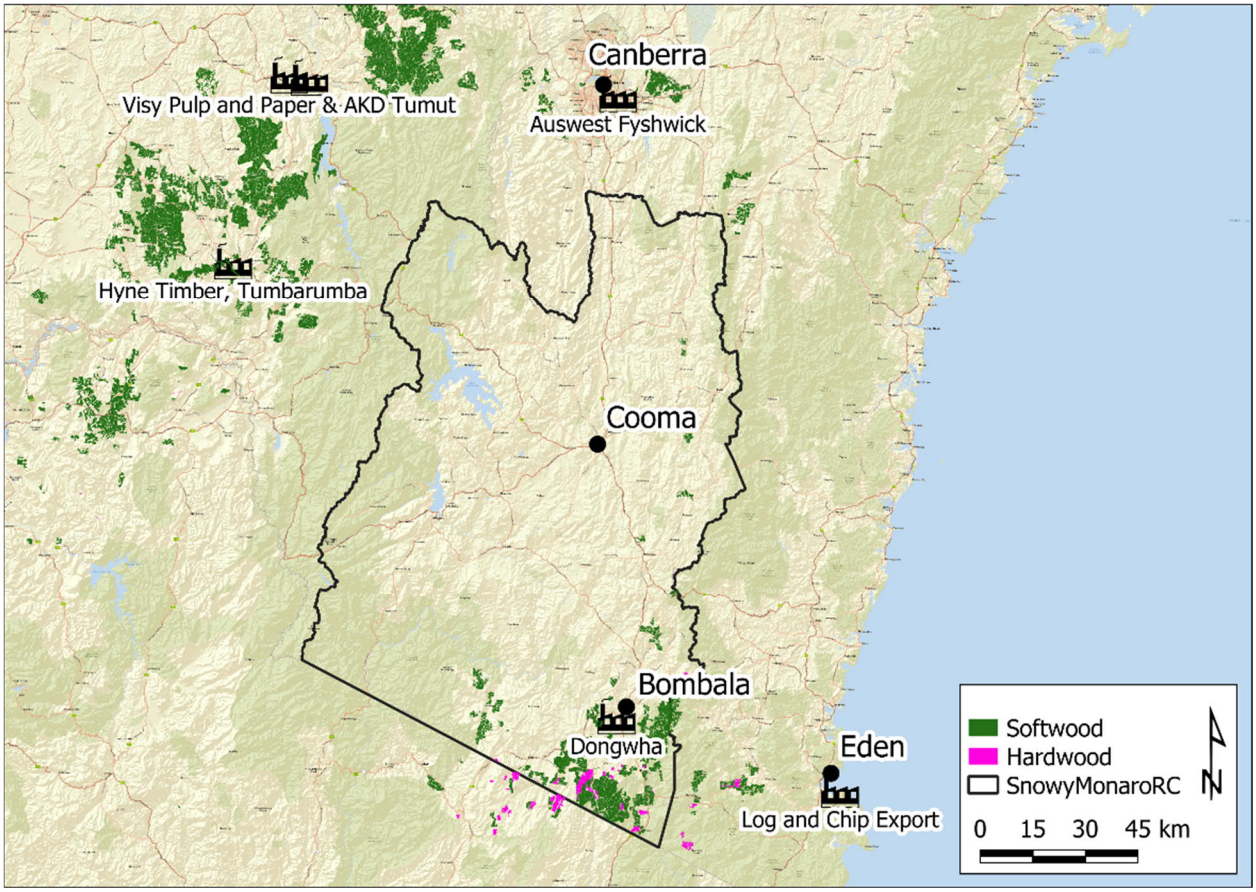
3.2 Location of Softwood Plantations in the Bombala Region

Figure 3-1 below illustrates the location of the Bombala softwood plantations both within the Council boundaries and in nearby Shires.

For commercial reasons, the forest owners are not comfortable disclosing their actual forest estate sizes.

Apart from the three main growers, being Forestry Corporation of NSW (the renamed Forestry Commission of NSW), GFP (Snowy Mountains Forests and Southern Cross Forests) and Primary Securities, there is also an area of hardwood plantations (known as Sapphire Forests) that are owned by Pentarch the company that owns and operates the Allied Natural Wood Exports (ANWE) Eden log export and woodchip mill at Twofold Bay.

Figure 3-1:
Location of the Bombala and Tumut Softwood Plantations & Processing Industry



Source: ABARES, ESRI, Margules Groome

The total area of softwood plantations within the Council area is approximately 37 thousand hectares with another 10 thousand hectares within the Bega Valley and Queanbeyan Palarang Shires that can also supply the industry in Bombala.

3.3 Forest Products Processing in the Bombala Region

The softwood processing capacity at Bombala is concentrated around the company Dongwha Australia (Dongwha) which operates its sawmill at Sandy Lane on the southern side of town and has a log input capacity of 320,000 cubic metres per annum.

Dongwha is a well-known Korean company that was founded in 1948 and now operates in many countries including Vietnam, Malaysia and New Zealand. Initially they established as a sawmilling business but have developed considerable

expertise in wood panels production including particleboard and medium density fibreboard (MDF) and value-added products like flooring and panelling.

Dongwha commenced in Bombala as a Joint Venture with Willmott Forests in June 2008. Prior to this Willmott Forests had purchased the roundwood pressure treating business known as Prime Pine in 2003 which was founded by Sam Baker in 1977 as Monaro Pressure Treated Timbers. Following the collapse of Willmott Forests in 2011 Dongwha purchased the Willmott share from the receivers. The business was then known as Dongwha Timbers but the company changed its name to Dongwha Australia in 2018.

Dongwha would be considered a medium sized sawmilling operation and they cut predominantly landscape and exterior decking products which are pressure treated. This is a point of difference for Dongwha as they do not have the economies of scale to compete directly with the larger sawmilling companies cutting structural timber for house frames. Figure 3-2 illustrates a common use of the treated large end section sawntimber produced by Dongwha in a new pedestrian walkway from Spencer Park to Bar Beach in Merimbula.

Figure 3-2
Dongwha treated sawn timber used in a pedestrian walkway in Merimbula

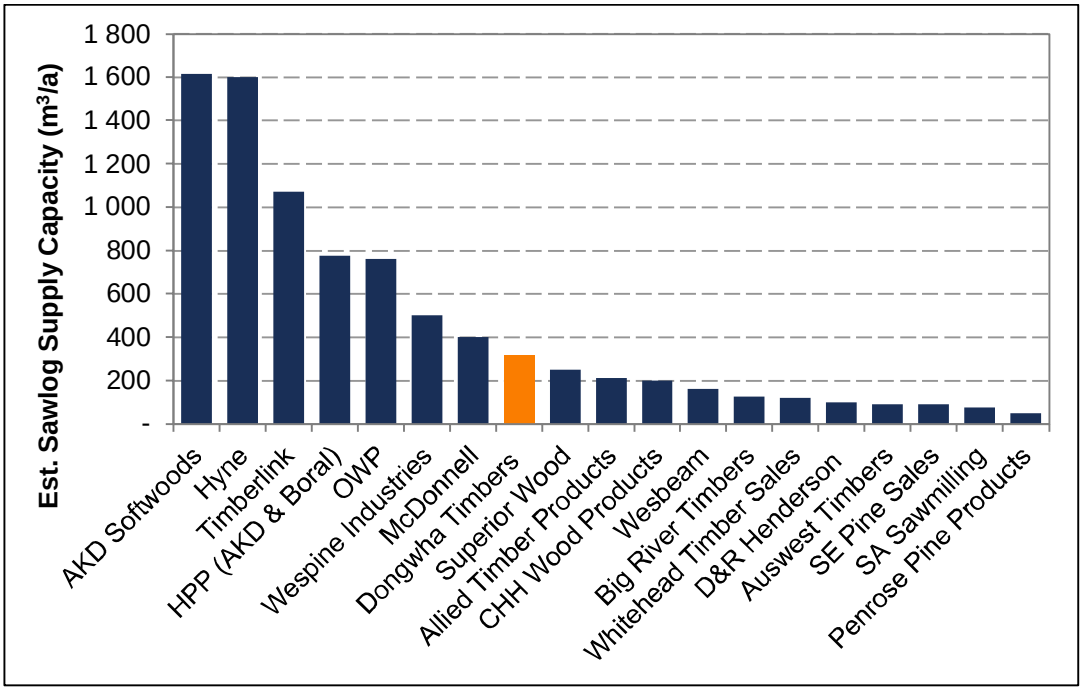
The next closest softwood sawmill to Dongwha is Auswest in Fyshwick in Canberra which cuts battens for roof tiles.

Within southern NSW there are two large sawmills, one at Tumut owned by AKD a family sawmilling and plantation business based in Colac, Victoria, and the other at Tumbarumba owned by the Hyne family from Queensland.

Despite being considered a medium sized sawmill Dongwha is one of the top ten softwood sawmilling businesses in Australia as shown below in Figure 3-3.

Note the figures below may contain more than one sawmill for example AKD has three sawmills plus one in a joint venture with Boral and Hyne has two sawmills.

Figure 3-3:
Australia's major softwood sawmilling companies by log intake in cubic metres



Source: Margules Groome

Visy Pulp and Paper operate a kraft pulp and paper mill at Tumut for making packaging grade paper products and purchases pulplogs and sawmill residues (woodchips) from the Bombala region.

Pentarch Forest Products operates a wood chip and log export facility at Twofold Bay near Eden. Allied Natural Wood Exports or ANWE, a subsidiary of Pentarch and formerly South-East Fibre Exports (commonly referred to as SEFE), now operates the woodchip mill and they chip hardwood pulplogs for export from the region as well as some softwood chips.

3.4 The Softwood Supply Chain

The Bombala softwood supply chain can be defined in several categories as follows:

1. Forest Growers – who own and manage the softwood plantations.
2. Forest silvicultural contracting services - who provide a range of management services which may include planting and pruning, fertilizing and weed control and inventory (tree measurement).
3. Forest Infrastructure Services - generally provide road and firebreak construction, maintenance and drainage works.
4. Forest Harvesting and Haulage contractors - who harvest the standing trees and deliver them by truck to the primary processing plants such as sawmills.
5. Primary processing - such as Dongwha Australia sawmill.
6. Secondary processing - typically a frame and truss plant like High Country Truss and Frame in Cooma. These companies fabricate wall frames and roof

trusses for residential homes. Residues like sawdust and shavings are also processed locally into a range of products like animal bedding and pellets.

In addition, there are a range of support services that provide parts and repairs to the main operators and despatch and courier services that are associated with deliveries to and from Bombala. Table 3-1 shows the range of companies in the Bombala softwood supply chain.

Table 3-1:
Forest Industry Structure in the Bombala Region

Forest Growers	Who
Forest Owners	Forestry Corporation of NSW Snowy Mountains Forests Southern Cross Forests Primary Securities Other small private owners – Roger Clark etc
Silvicultural Services	Stones Forestry Contracting Southern Highland Contracting Outland Resources
Infrastructure services	Rodwell Logging Pty Ltd Stewarts Earthworx Pty Ltd Jamies Bobcats Pty Ltd Digga's Bobcats Pty Ltd R Carey Pty Ltd Bizz's Contracting Pty Ltd
Harvesting & Haulage Contractors	D&L High Country Earthworks Rodwell Logging Pty Ltd DT Richards Pty Ltd Monaro Logging Pty Ltd MC Logging Pty Ltd Bassover Pty Ltd Boss Logging Pty Ltd McKinnells Pty Ltd Wilton Logging Pty Ltd
Primary Processing	Dongwha Australia Pentarch/ANWE
Secondary Processing (End product & residues)	Highland Truss and Frame Straw Services Mighty Mulch Pellet Experts Pine Grow
End Product & Services Transport	Abletts Transport T&J Murphy Transport and Building Supplies
Forestry Support Services	MCH Engineering Bombala Cycles and Chainsaws D&M Automotive Bombala Tyres Cottrell Motors Village Ford Nutrien Bombala Platypus Smash Repairs……etc

Source: Margules Groome

3.5 Australian Softwood Supply Chain

Nationally the softwood supply chain can be defined in the following sectors

- Forest Growers.
- Harvest and Haulage Contractors.
- Domestic Processors (Sawmills, Wood Based Panel mills like particleboard, MDF (medium density fibreboard) and veneer mills for plywood production.

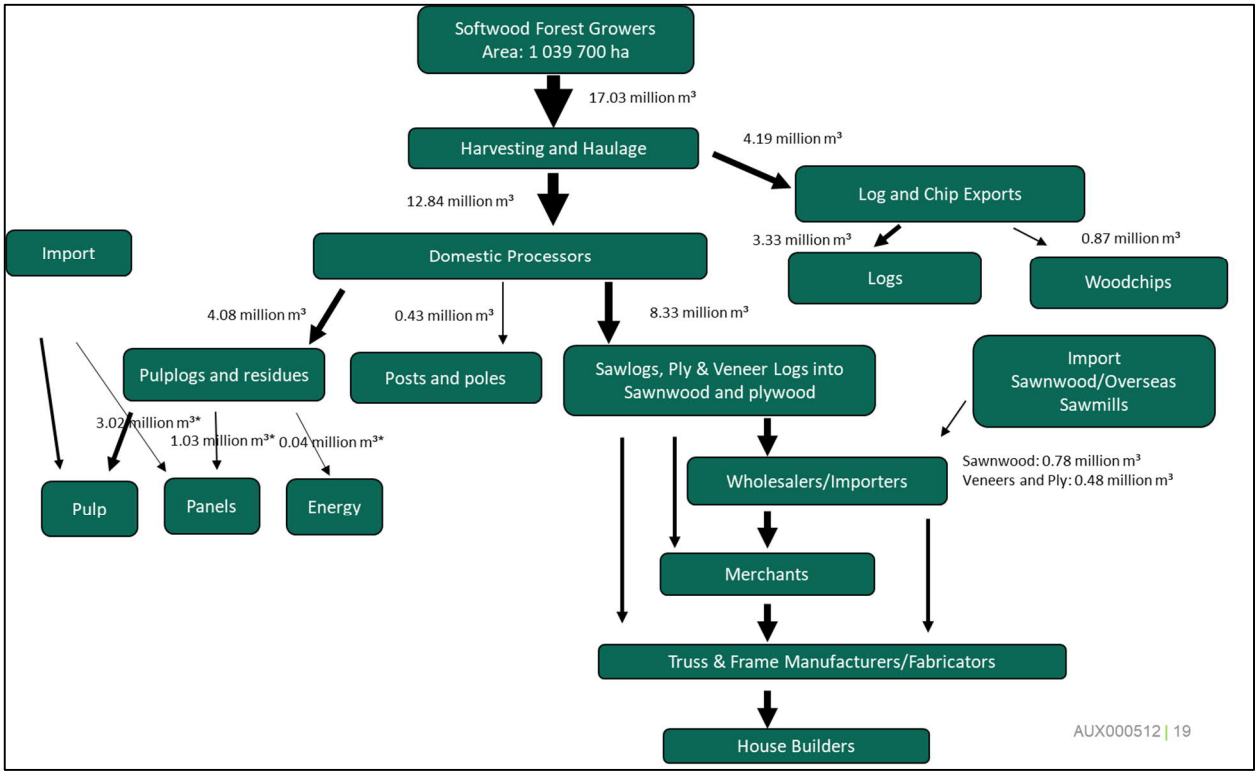
Then for sawn timber the supply chain transfers to:

- Wholesalers/Merchants and Importers.
- Frame and Truss Manufacturers.
- House Builders.

The national supply chain is not necessarily linear as some sawmills will supply direct to Frame and Truss Manufacturers and/or House builders.

A schematic indication of the supply chain by log and product volume is shown below in Figure 3-4:

Figure 3-4:
Australian Softwood Supply Chain by volume to Processors



Source: Margules Groome

Most of the sawn timber in Australia is used in residential house construction. Commercial buildings like offices and shops have been traditionally constructed from concrete and steel. Sawn timber has only been used in non-structural applications like fitouts. However, mass timber construction methods using engineered wood products that can carry heavy loads like cross laminated timber

(CLT)and laminated veneer lumber (LVL) are being increasingly used and can be used in buildings up to 8 storeys high in Australia.

There are some challenges in the Australian softwood sawntimber supply chain which include:

- The lack of plantation expansion is limiting the supply of Australian grown softwood sawntimber.
- Australia produces high quality softwood sawntimber and the domestic sawmills are large and efficient, but the supply chain begins to fragment beyond the sawmill. For example:
  - There are approximately 12 major softwood growers supplying 14 major softwood sawmills which then supply at least 300 frame and truss plants and countless merchants and wholesalers which supply upwards of 500 home builders. Fragmentation increases towards the end market although retailers like Bunnings and Mitre 10 provide scale at the retail end of the chain.
  - This fragmentation results in a lack of knowledge by end users on the main sawntimber growers and sawmills and vice versa.
- An article in the Australian Financial Review last year (June 20, 2019) stated that home builders operate in a highly fragmented market where the 100 biggest home builders provide only a third of the market[4]. But according to Kelvin Ryan the Chief Executive of Simonds Group, consolidation is coming for the home builders.

As a result of this fragmented supply chain, softwood sawn timber is a commodity with no brand dominance or loyalty. As a result, softwood plantation growers are price takers and the lack of transparency in the softwood sawntimber supply chain may be a significant disincentive for private landowners to invest in plantation development.

3.6 Bombala Region Key Transport Routes

The key transport routes for the Bombala softwood industry are as follows:

Logs to Dongwha come via:

- the Monaro Highway from the south.
- The Delegate and Corrowong roads to the west.
- The Tayfield road from Coolangubra to the east.

[4] https://www.afr.com/property/residential/consolidation-is-coming-in-home-building-simonds-boss-says-20190618-p51z0v

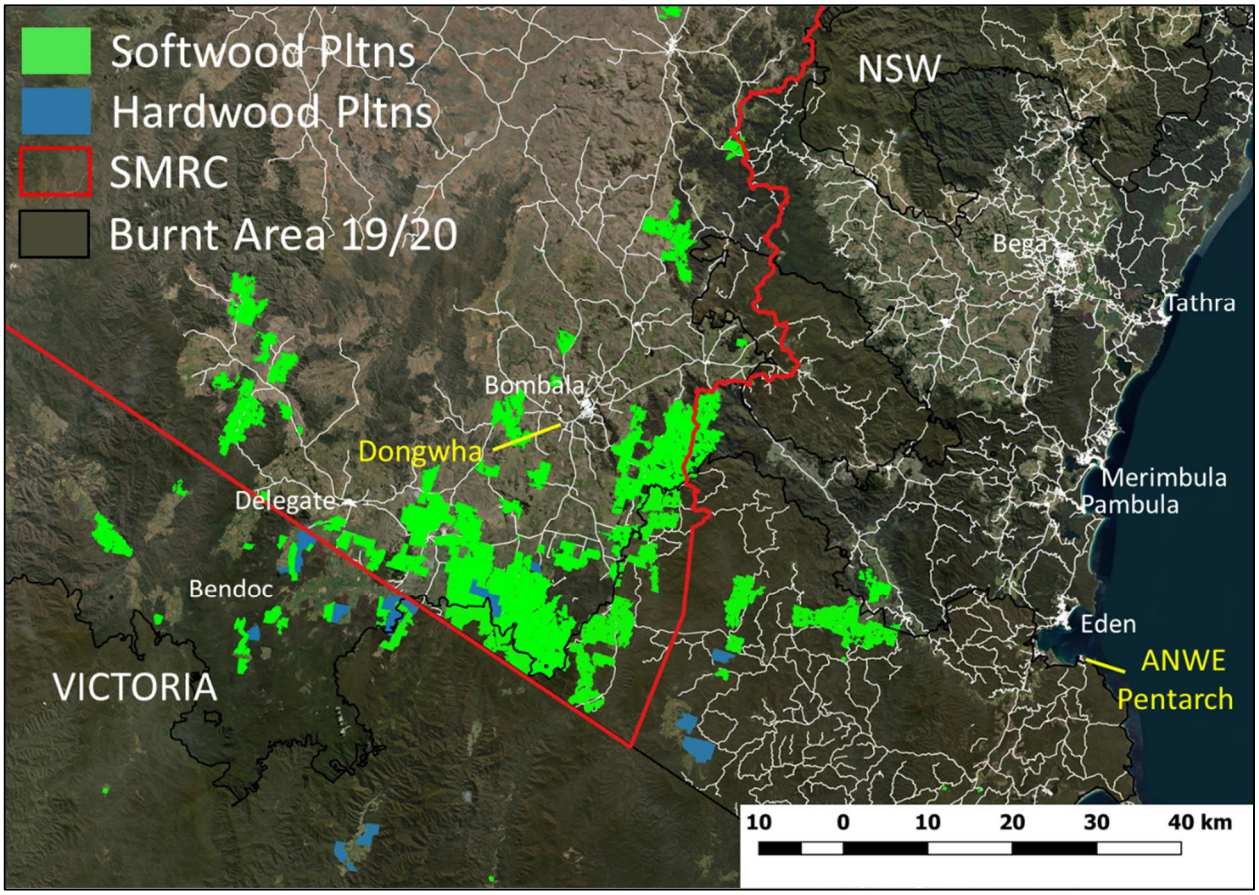
Pulplogs bound for Visy are hauled north of Bombala to Canberra on the Monaro Highway and then to Tumut via the Barton and Hume Highways.

Logs for export head south on the Monaro Highway and then east on the Imlay Road to the Princes Highway and the Edrom Road to the export port.

End products are nearly all taken north along the Monaro Highway to Canberra and Sydney.

The main road networks within the plantations are shown below in Figure 3-5

Figure 3-5:
Location of Plantations and Major Roads within Snowy Monaro Regional Council



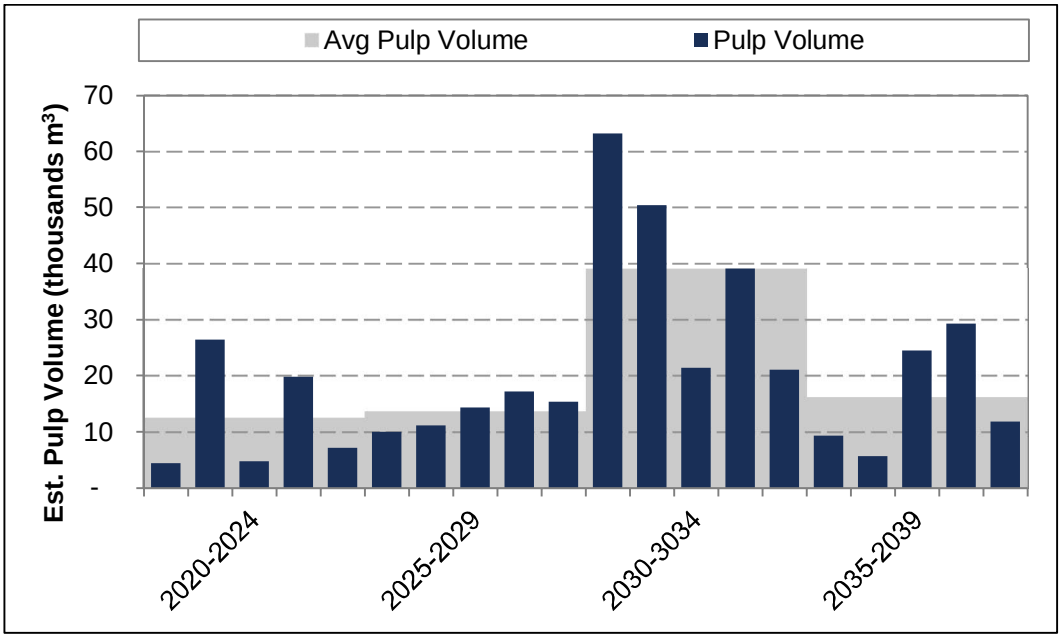
Source: NSW RFS, FCNSW, ABARES, Margules Groome

Margules Groome does not have all the base data or the permission to develop a future transport plan for the Bombala softwood resource.

However, to provide an example Margules Groome has made some assumptions which may not be correct as the forest managers may harvest their plantations differently but the following Figure 3-6 illustrates the potential pulpwood volume that could be hauled north via Cathcart and Black Lake Road to the Monaro highway and ultimately to Visy Industries in Tumut.

The blue bars show total annual volume and the grey shading is average volume over five year periods.

Figure 3-6
Potential Traffic Flow from Coolangubra via Cathcart & Black Lake Road to Visy



Snowy Monaro Regional Council may wish to establish a south-east forestry working group (possibly including Bega Valley Shire) to develop a consensus view with forest growers and log processors on which roads are a priority for investment upgrades.

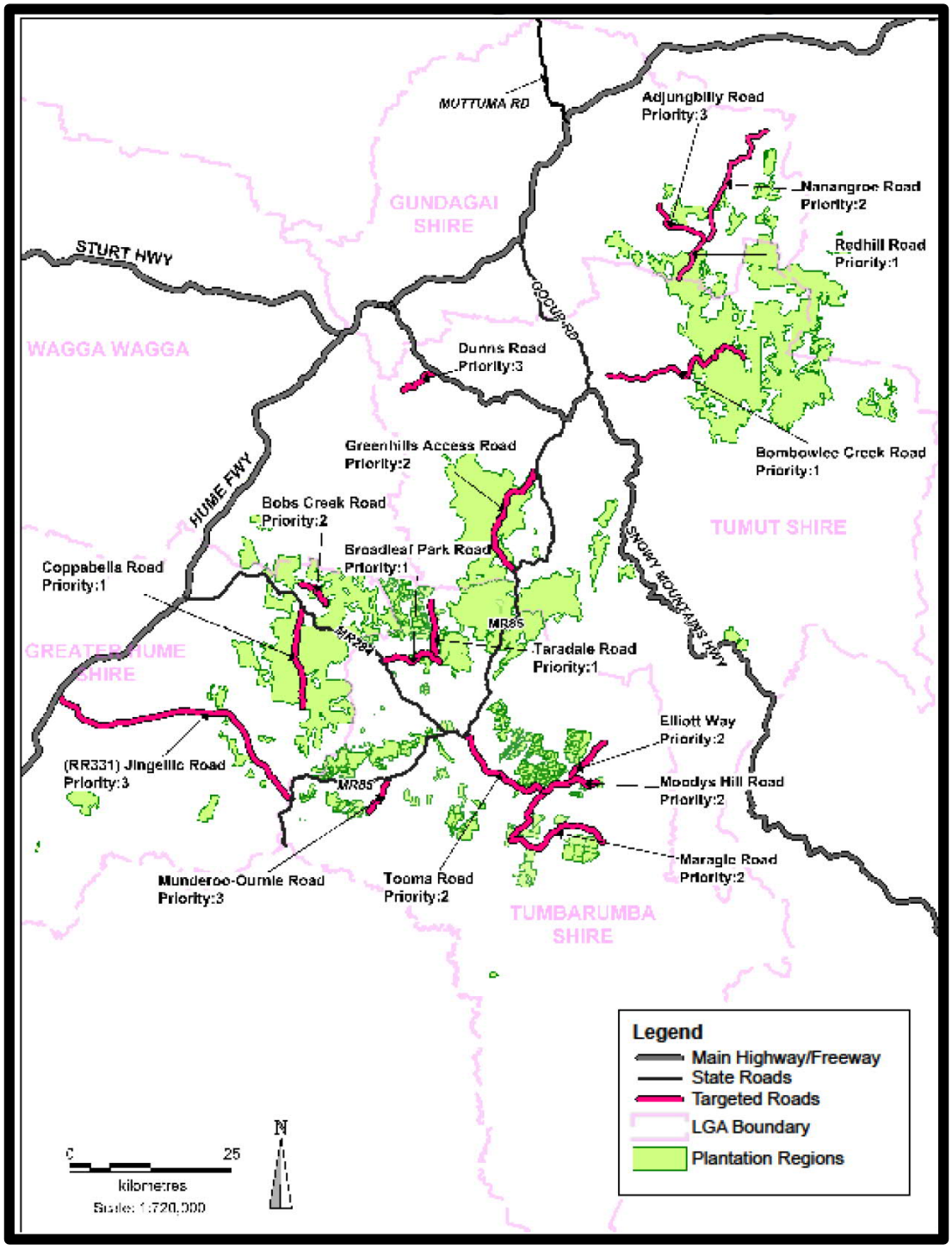
Other regions of Australia periodically review log haulage in conjunction with local government to assess road use and/or road upgrade requirements.

For example, on the south-west slopes of New South Wales the Softwoods Working Group covers several local government areas around Tumut, Gundagai, Tumbarumba and the Greater Hume region to develop future transport plans for the forest industry needs. The Softwoods Working Group's most recent report in 2015 stated:

'Five reports (1990, 1995, 1997, 2001, and 2009) have been produced over the past twenty four years, as "Road Haulage Studies", to provide a regular update on the road transportation requirements for growing and processing products from softwood plantations in the south-west slopes of New South Wales.'

This 2015 study developed a view from industry and stakeholders to determine the priority roads for upgrading which is shown below in Figure 3-7

Figure 3-7:
Location of 12 Priority Projects identified for South-west Slopes



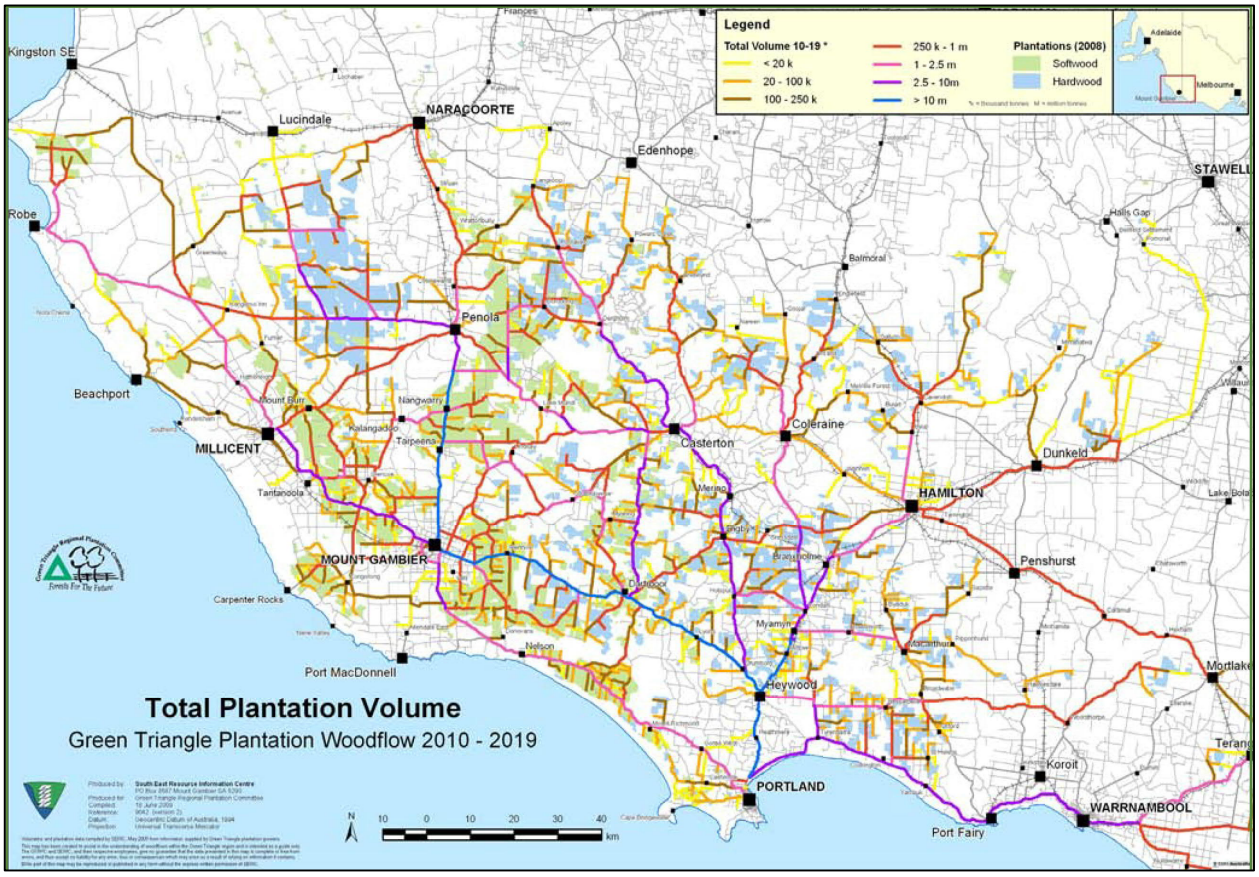
Source: Softwoods Working Group – 2015 Road Haulage Study

This 2015 report resulted in $20 million of funding for roads from the NSW Government.

Another example of a similar study in the Green Triangle region of south-west Victoria and south-east South Australia by the Green Triangle Regional Plantation Committee (GTRPC) illustrates graphically which roads will be used. Note each road is colour coded for the anticipated volume between 2010 and 2019. Yellow coding

suggests less than 20,000 tonnes graduating up to blue coding showing greater than 10 million tonnes. Note this volume is for the period between 2010 and 2019 it is not an annual volume.

Figure 3-8:
Total Log Haulage by Tonnes by Road in the Green Triangle Region 2009-2010



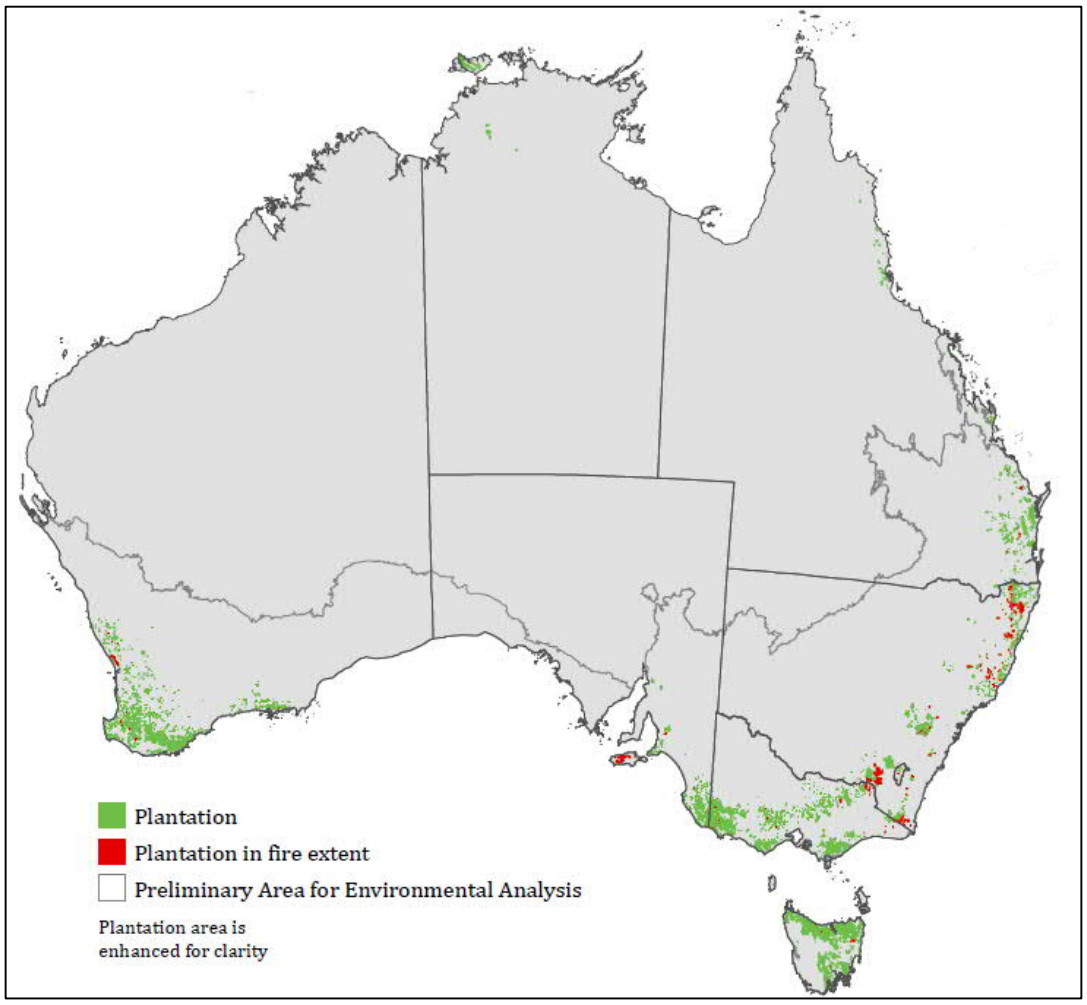
Source: GTRPC

4 BLACK SUMMER BUSHFIRES OF 2019-20

The Black Summer bushfires of 2019-20 burnt over 5.681 million hectares in New South Wales and were the worst fires since 1951/52 which burnt 5.47 million hectares. New South Wales was the most affected state and represented 56 per cent of the total area burnt in Australia which was approximately 10.2 million hectares (Davey & Sarre 2020).

Plantation losses around Australia were significant and estimated at 129 thousand hectares of which New South Wales suffered the most severe losses of approximately 92 thousand hectares or 71 percent of the total plantation area burnt. The following Figure 4-1 illustrates the location of plantations (both hardwood and softwood) across Australia (in green shading) and those areas lost to bushfires last summer are shown in red shading. Note the plantation areas are enhanced to improve their clarity.

Figure 4-1:
Australia's Plantation Estate showing Bushfire Losses



Source: Downham, R & Gavran, M. ABARES. 2020

In New South Wales, the total plantation area is approximately 393 thousand hectares and as mentioned above approximately 92 thousand hectares was

impacted by the bushfires which represents 23.4% of the total plantation area in the state.

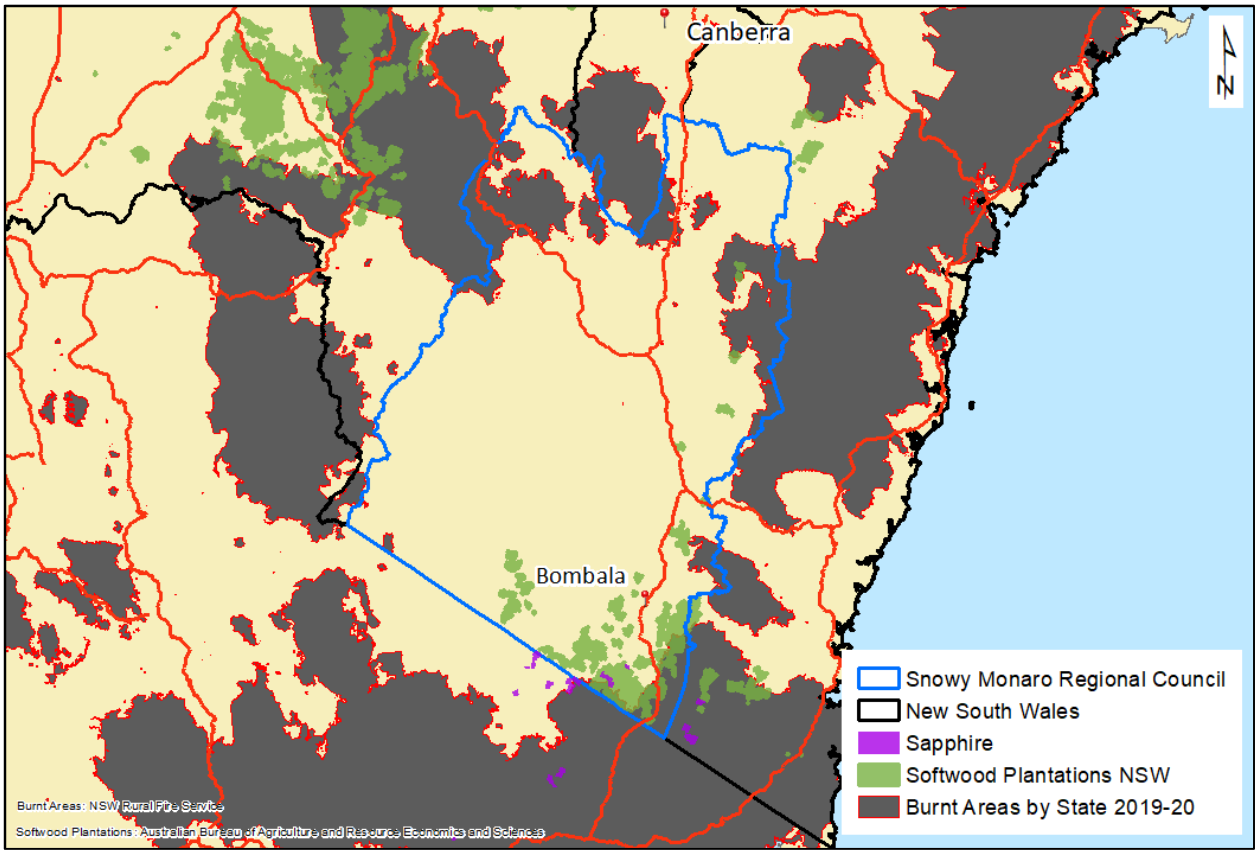
The breakdown of the fire impact on plantations in NSW has been estimated at 71 000 hectares of softwood and 21 000 hectares of hardwood.

Overall, the impact on the markets will depend on the fire severity and each plantation owner's decision on salvage operations and replanting. This impact may not be known for several years.

4.1 Bombala Bushfire Impact

The following Figure 4-2 illustrates the softwood plantation area shown in green shading and the extent of the bushfires shown in grey shading in the Bombala region. The area in purple shading is the Sapphire Forests hardwood plantations owned by Pentarch.

Figure 4-2:
Bushfire Impact on Bombala Plantations



Source ABARES, NSW RFS,

The total softwood plantation loss in the Bombala region during the Black Summer fires was approximately 10 thousand hectares.

This corresponds to the bad bushfire that occurred in Bombala in 1983 and burnt approximately 6,820 hectares of softwood plantations being 6,460 hectares managed by the Forestry Commission of NSW and 360 hectares of private softwood

plantation owned by Kapunda Development Company P/L. The following is an excerpt from the Forestry Commission 1982/83 Annual Report:

"6 457 ha, 46 percent of plantations in the Bombala Management Area were destroyed by fire. Fortunately, the average age of the burnt stands was between six and seven years, reducing re-establishment problems, minimising short-term wood yield implications, and having no effect on established industries.

4.2 Softwood Woodflow and Supply Sustainability Impact

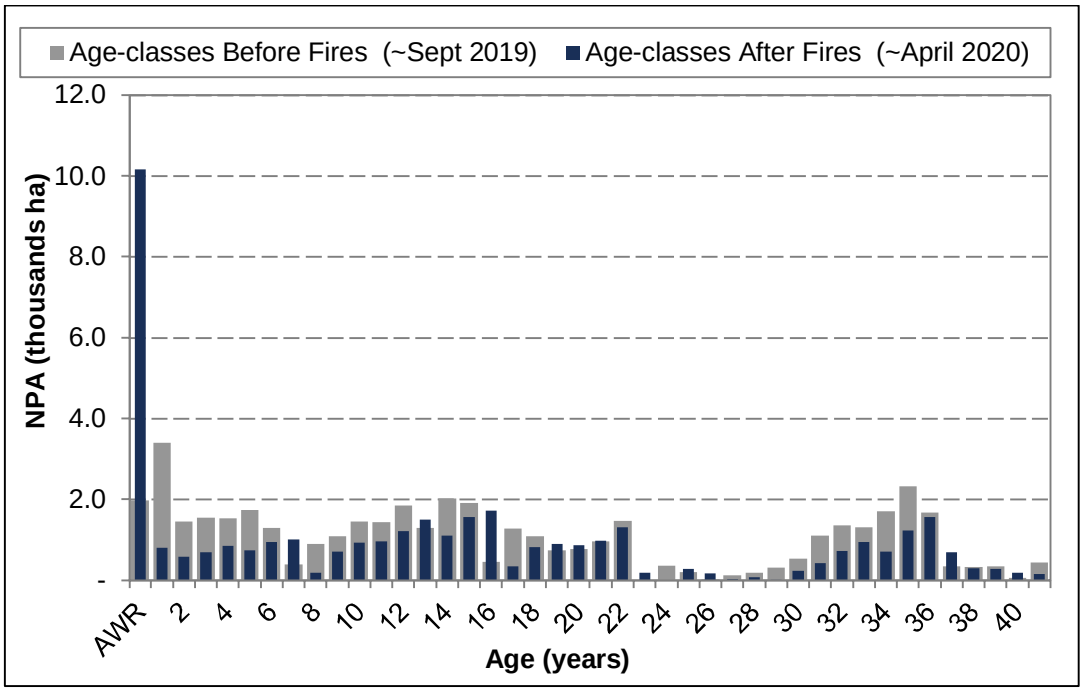
The impact of the fires to the age-class structure in the region can be seen from the following Figure 4-3 in net productive area (NPA) terms.

The most visible change is the massive increase in the area awaiting replanting (AWR), which has increased from about 2 thousand hectares to almost 12 thousand hectares.

Other major changes in the age-classes can be seen in the ages 1-5, however most of the fire appears to have damaged relative similar levels from the other age-class groups.

Some of the area changes in the older ages-classes can be attributed to scheduled harvesting and is not all fire related.

Figure 4-3:
Bombala Region Softwood Plantation Age Class – Before and After the 2019/20 Bushfires

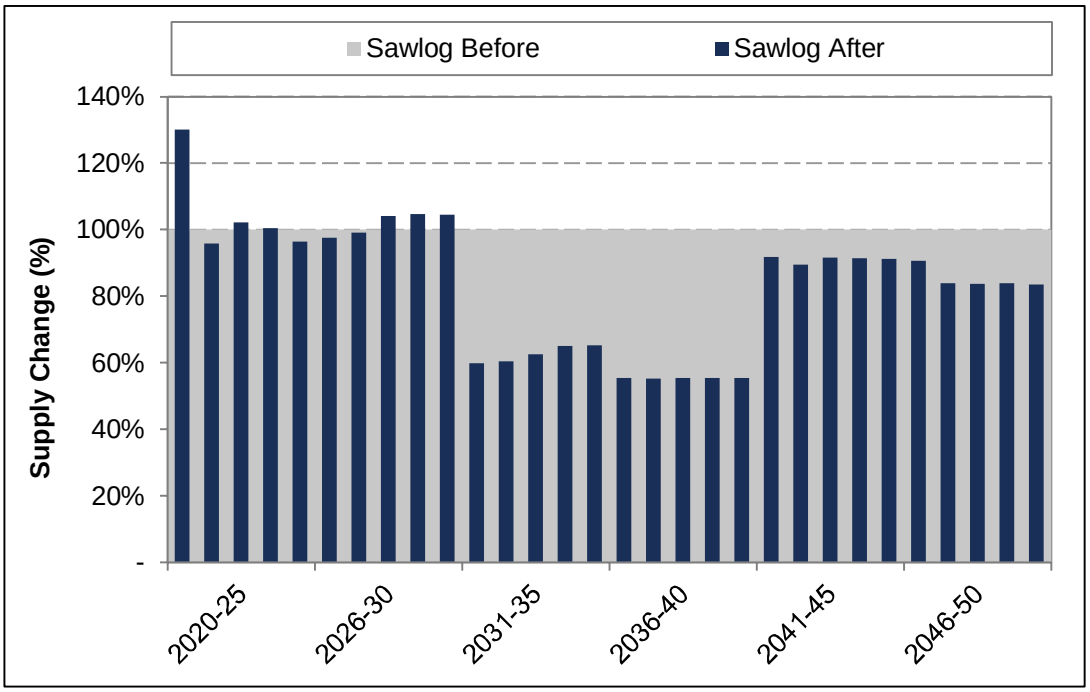


The following figure shows the relative supply change in the Bombala region. Ttotal sawlog supply will increase over the first 5-year period (2020-2025) due to salvage harvesting.

However, the supply over the following 5-year periods is only about 60% of the original woodflows up until 2046 when the woodflows start to pick up again. In

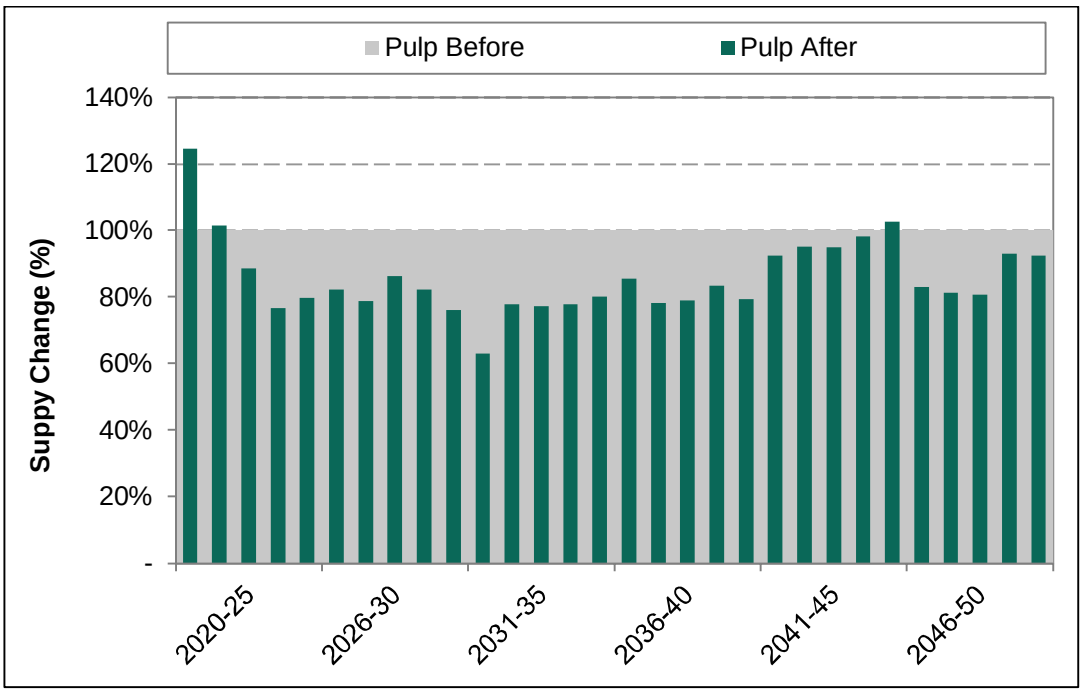
2046-2050 the sawlog supply is forecast to be almost on the same level with the volumes forecast before the fire, but pulp volume is still behind the before fire levels. This means that it will take 26 years to recover in terms of annual harvest volume from these fires.

Figure 4-4:
Change in Sustainable Sawlog Supply Before and After the 2019-20 Bushfires



Note:Presented as relative % supply change due to data confidentiality
Source: FCNSW, GFP, Primary Securities, Dongwha, Margules Groome

Figure 4-5:
Change in Sustainable Pulplog Supply Before and After the 2019-20 Bushfires

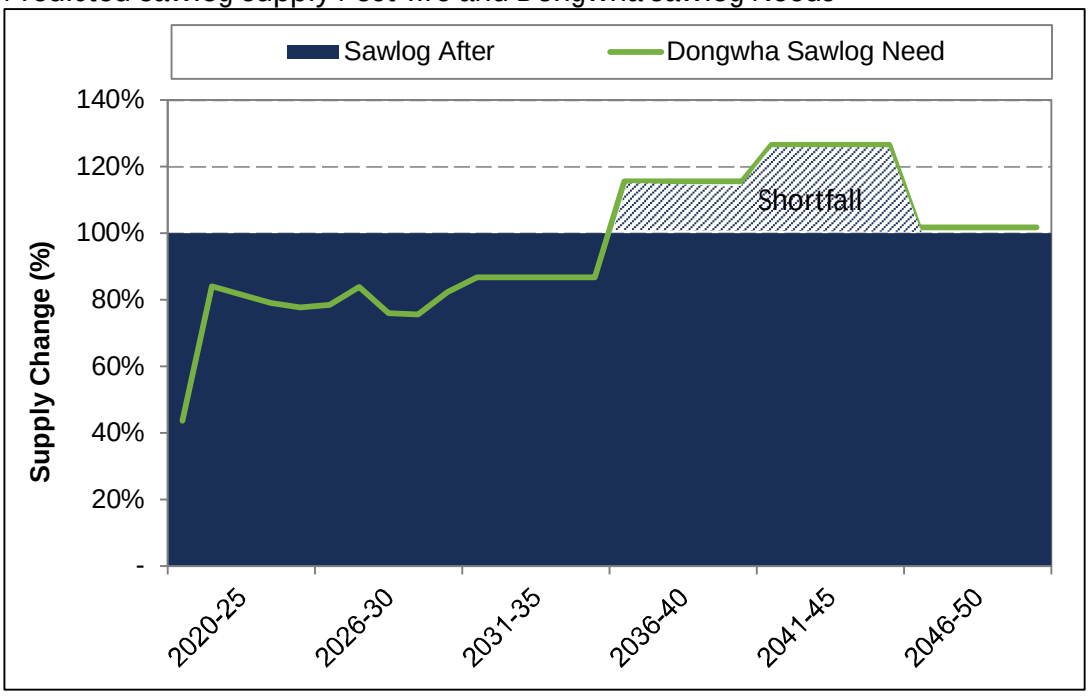


Source: FCNSW, GFP, Primary Securities, Margules Groome

From these figures it can be seen the change in the woodflows for different log types:

- Pulplog supply immediately increases due to the fire salvage harvest operations then declines to about 80% of the predicted supply before the fire by 2024 and remains at that level for 16 years before recovering from 2041.
- Sawlog supply immediately increases due to the fire salvage harvest operations. Supplies can be maintained till 2030 at pre-fire levels before plummeting to about 60% of pre-fire levels for 10 years before starting to recover from 2041. Critically, the post fire available supplies fall short of Dongwha's needs (320 thousand m^3/a) from 2035 and don't get back to meeting those needs till 2046 (Figure 4-6).

Figure 4-6:
Predicted Sawlog Supply Post-fire and Dongwha Sawlog Needs



4.3 Options for Dongwha Australia

Dongwha is currently reviewing its supply options to determine what is the most cost-effective option to adjust their processing to address the pending shortfall.

The options are:

- Source an alternative supply of sawlogs – due to the extensive bushfires last summer there are limited alternative softwood sawlog supplies as other processors were similarly impacted. Dongwha have reviewed the option of importing logs from New Zealand via Eden but the landed cost is too high but there may be an option involving some resource swap of pulp log and/or sawmill chip to Gippsland in return for sawlogs.

- Reconfigure the sawmill – Dongwha are reviewing their processing options to consider some different options such as:
    - Increase value adding - for example shift some production to engineered wood products like glulam or cross laminated timber which allows low quality sawnwood to be glued into very high strength construction products such as beams and panels.
    - Process smaller diameter and or shorter logs – modern softwood sawmilling relies on consistent log diameter and log length to minimize the changes in saw patterns and the longer lengths allow a faster average cutting speed. Dongwha may be able to reconfigure their sawmill to allow a wider range of log diameter and length to be cut efficiently.
    - Process a lower log volume – through a combination of the above options Dongwha may be able to adjust their production by 40% by changing the way the processing line operates to enable them to remain profitable with a lower log input.

Analysing the above options is not a simple process as it requires detailed information firstly on the resource projections for sawlog production in volume and quality for the remaining plantation resource and secondly what capital investment may be required to achieve the new production efficiencies and/or products.

Dongwha is currently reviewing these options and may request assistance from the Snowy Monaro Regional Council to assist with access to government support when and where appropriate.

5 BOMBALA REGION SOFTWOOD ECONOMIC IMPACT

The Bombala softwood resource of 47 thousand hectares would be considered a medium sized plantation resource in New South Wales when compared to the South West Slopes around Tumut and Tumbarumba which has 165 thousand hectares and the Central Tablelands around Bathurst and Oberon which has nearly 86 thousand hectares of softwood (Schirmer et al 2018).

5.1 Plantation Value

Margules Groome specialises in the valuation of plantations and in their considered opinion the softwood plantation estate around Bombala would be worth between 250 and 300 million dollars or between 5 and 6 thousand dollars per net stocked hectare. This includes an allowance for land value but recognising that there is both crown land and freehold within the estate.

5.2 Economic Value and Capital Investment

The direct value of output based on of the sawn timber, residues and delivered logs to the Visy pulpmill in Tumut and to the export operations of Pentarch at Twofold Bay in Eden is estimated at 92 million dollars per annum before the bushfires.

The annual harvest and woodflow varies over time as not all the plantations in the region are managed on sustainable yield systems. Prior to the bushfires the annual harvest was approximately 600 thousand cubic metres per annum of which 350 to 400 thousand cubic metres were sawlogs of various grades.

Dongwha at Bombala is the main market for sawlogs and Pentarch at Eden export sawlogs that do not suit the Dongwha specifications. Pulplogs are sold to Visy at Tumut and Pentarch at Eden for whole log exports. There is also some softwood chip that is exported from Eden.

The capital investment in equipment to grow, protect, harvest, haul and locally process the annual log harvest is estimated to be close to $160 million dollars.

In total the combined direct capital investment in the Bombala softwood plantation resource and industry is estimated at between $410 to $460 million and if the support industries within the town of Bombala and Eden port are considered then the total capital invested would be significantly more than this and getting close to 0.5 billion dollars.

5.3 Employment

Employment is also significant and Margules Groome has estimated that there are 370 people directly employed in growing, managing, harvesting, haulage and sawn timber processing in the Bombala softwood plantation region. In addition, there is a considerable number of casual employees that are engaged at peak times of the year such as during planting, firefighting and log boat loading at Eden.

The flow on effect from direct jobs to indirect employment defines jobs in industries that support the forestry operations around Bombala such as MCH Engineering,

Bombala Cycles and Chainsaws, Bombala Tyres, the various garages and cafes etc. The level of indirect employment is generally quoted as a ratio of direct employment. A recent report by Forest and Wood Products Australia defined the ratio for the southwest slopes around Tumut and Tumbarumba is 1.8 and for the Central Tablelands around Bathurst Oberon of 1.4 As Bombala does not have the same level of log value adding as these two regions Margules Groome believe the ratio would be slightly lower and so they have used a conservative ratio of 1.2. This means that from the 370 direct jobs there would nearly another 450 indirect jobs in businesses that service and/or rely on the Bombala industry in some way in New South Wales.

5.4 Bushfire Impact

The Black Summer bushfires in January this year impacted around 10 thousand hectares of softwood plantation in the Bombala and Bega Valley region. This is the second time a major fire has impacted the softwood plantations at Bombala as 6 thousand hectares was lost in 1983

Simple replacement cost of these losses in current terms would be at least 40 million dollars.

The opportunity cost (future log value) of the bushfires is much higher and estimated to be at least $100 million dollars for the 2019-20 bushfires.

In terms of time, it will take around 26 years to 2046 before the Bombala region returns to the pre bushfire harvest potential.

Creating a valuable softwood plantation asset that is sustainable and renewable takes many years. The first plantations were established nearly 100 years ago but construction of the new modern Dongwha sawmill did not happen until 2011 some 80 years after the first pines were planted. Admittedly a pine sawmill had operated in Bombala for several years in the 1970's and 80's but it could only process the older pre-war pines.

Creating a renewable and sustainable forest asset requires vision and protection if it is to deliver lasting economic benefits to not only the local region of Bombala but also nationally.

5.5 Workforce Requirements

Nearly all businesses interviewed, mentioned they had problems attracting and retaining skilled staff.

Based on discussions with various businesses directly engaged in the industry there are between 15 and 20 current vacancies for skilled staff.

5.6 Economic Disappointments

While the above economic assessment is positive and the industry regionally significant it is suboptimal to what it could be.

Bombala has received more than its share of economic development disappointments.

- In 1980 the Forestry Commission of NSW and Kapunda Development Company Pty Ltd were approached by Harris Diashowa who then owned the Eden woodchip mill to supply first thinnings for an export contract to Japan. This contract would have provided a market for first thinnings which are critical to perform to optimise the productivity of plantations, especially sawlogs. However, markets for first thinnings were scarce at the time and this was an excellent opportunity. The NSW Premier and local member overruled the export in favour of a desire for domestic processing, which did not eventuate. The export opportunity was lost to New Zealand and that sale arrangement lasted for well over 20 years.
- In 1983 prior to Ash Wednesday a bushfire from Victoria destroyed nearly 6,500 hectares of softwood plantation which changed the maturity profile of the Bombala resource
- In the early 1990's CSR won a tender to build a Medium Density Fibreboard plant at Bombala which never eventuated due to market downturns and CSR exiting the industry.
- In 2011 Willmott Forests went into liquidation following a controversial period of plantation development funded by managed investment schemes. This forced Dongwha to purchase 100% of the Bombala sawmill and complete its construction and commissioning.
- In 2019/20 – the Black Summer Bushfires destroyed 10 thousand hectares of plantations which will again impact potential harvest levels over the next 20 to 30 years.

The above disappointments are provided to stress how much time and effort is required to develop sustainable and renewable businesses. Plantation assets must be protected and promoted to achieve their economic potential, and this is usually signified by most of the harvest is processed locally.

6 DISASTER PLANNING

Disasters can take many forms such as earthquakes, floods, bushfires, wild storms etc. The following section relates to bushfire planning but many of the concepts apply equally to other disasters.

Australia is a fire prone landscape, and we need to accept this risk and learn to implement a series of measures that will mitigate the impacts of big bushfires.

We cannot and should never try to eliminate fire from our landscape as much of our flora and fauna relies on periodic cool fires.

One of the factors attributed to Monaro tree dieback of Euc vimminalis (Ribbon Gum) is the loss of fire from this ecosystem.

Fire is a great servant but a dangerous master and therefore having trained fire management experts in our communities is critical.

Indigenous Australians lived with and mastered the use of fire to not only remain safe but they also used it as a tool to hunt game and maintain a healthy landscape (Gammage, 2011).

Margules Groome is providing the following comments for the Councils consideration and they are based on the experience within the Margules Groome team and other forestry professionals, in particular members of the Bushfire Committee of the Institute of Foresters of Australia and skilled members of the Bushfire Front based in Western Australia.

Bushfires are a fact of life in Australia they have occurred periodically in the past 230 plus years of European settlement and despite many commentators suggesting that the Black Summer bushfires were unprecedented they were only marginally larger than the 1951/52 fires in NSW.

All Australians must learn to live with fire by either protecting themselves and their property from direct impact or protect themselves from the indirect impacts of fire such as excessive smoke and/or a disruption to daily services such as power and telecommunications.

The following comments are neither exhaustive nor are they meant to override the recommendations of other organisations and agencies including the findings of the NSW Bushfire Inquiry but they are for Councils consideration.

6.1 What can Council Control?

There are some aspects of bushfires that the Council can control and some that are uncontrollable, for example:

- Uncontrollable factors are: - climate change, drought, lightning strikes and dry summer storms, wind, temperature, humidity etc
- Controllable factors are: - the level of flammable fuels in the landscape and around property, equipment and technology for fast and efficient firefighting, strategically designed firebreaks and fire fighting support like

water points and response to the outbreak of a bushfire and the follow up recovery.

Fire is a simple element and a chemical reaction between three components oxygen, heat and fuel. There also needs to be ignition normally a spark to initiate the chemical reaction. Some ignitions can be controlled but dry lightning storms are uncontrollable and these storms can light multiple fires, often in very inaccessible places.

Therefore, as summer heat and oxygen occur naturally the only component that can be controlled or moderated is fuel.

6.2 Fuel Management and Prescribed Burning

Fuel can be controlled by either burning it under safe weather conditions or controlled mechanically by slashing, mulching or ploughing etc.

Prescribed burning which is sometime called hazard reduction burning or fuel reduction burning is an extremely effective method for reducing flammable fuels in the landscape, particularly forests.

However, it is critically important to note (and often poorly understood) that there is good prescribed burning and bad prescribed burning!

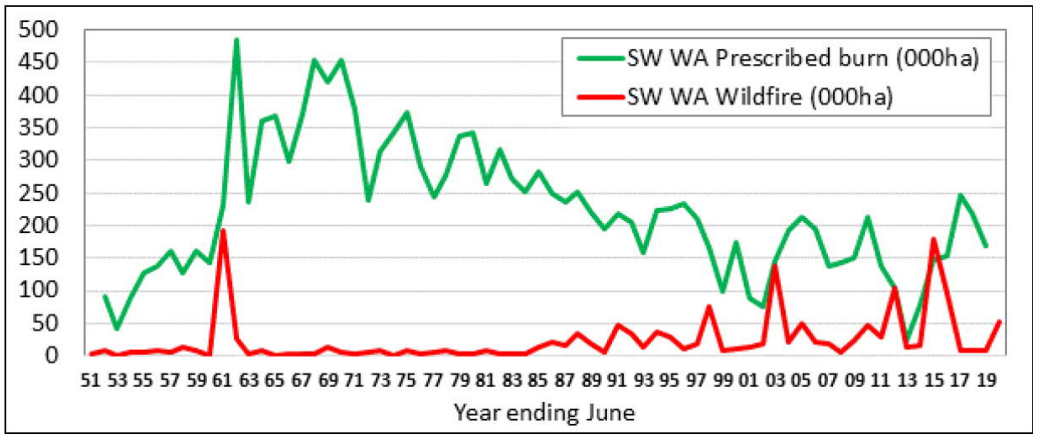
Good prescribed burning is a slow moving fire with very low flame heights generally around knee high or less and burns as a series of fires creeping across the landscape. A good test of a well implemented prescribed burn is no fire scorch in the crowns of the trees.

Bad prescribed burning will be a hot and relatively fast moving line of fire with varying flame heights and may end up with significant crown scorch. A poorly implemented prescribed burn is little more than a contained bushfire and is likely to initiate the germination of more scrub species which quickly re-build a flammable fuel load. Poorly performed prescribed burning is not effective and has created the misguided view that prescribed burning is not effective.

Very hot bushfires and well implemented prescribed burns are totally different in their impact on the landscape.

The following two charts are instructive on the benefits of prescribed burning in forests in Western Australia and Victoria. Western Australia has a very hot and dry climate and yet it has the lowest rate of bushfire and an enviable record in bushfire management and control. Much of this can be attributed to the research and effort they have invested in prescribed burning as shown below in Figure 6-1.

Figure 6-1
Correlation between area of prescribe burning & bushfires in SW Western Aust

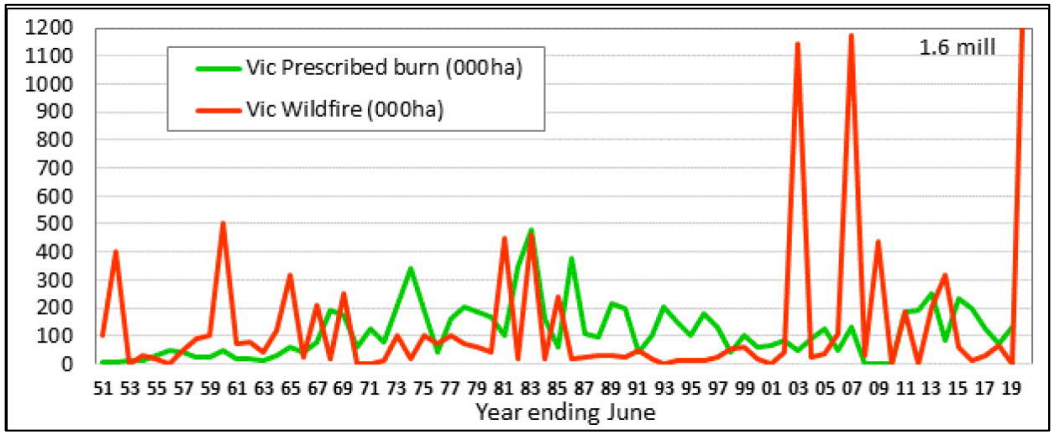


Source JN Cameron – submission to Bushfire Royal Commission 2020 – ex The Bushfire Front

Western Australia suffered a massive bushfire in the south west in 1961 and as a result implement an annual prescribed burning program of around 12% of their forest area. Interestingly the annual prescribed burning started to decrease in the late 1990's to around 8% of their forest area and correspondingly the area of bushfire (shown as Wildfire in the chart) increased!

Since 1962 and the implementation of extensive prescribed burning in south west Western Australia only 2 people have died in bushfires.

Figure 6-2
Correlation between area of prescribed burning and bushfires in Victoria



Source JN Cameron – submission to Bushfire Royal Commission 2020 – ex The Bushfire Front

The area of prescribed burning in Victoria has never been undertaken to the same level as south west Western Australia and as a result they have experienced many more serious fires.

Since 1962 and the implementation of extensive prescribed burning in south west Western Australia only 2 people have died in bushfires while 312 have died in Victoria.

Renowned Western Australian bushfire researchers, Dr Neil Burrows and Mr Rick Sneeuwjagt have provided an excellent summation on how prescribed burning can reduce the incidence and impact of mega bushfires: They comment as follows:

- To be effective, the prescribed burning must be strategic – done in the right places to intercept fire runs under the worst fire weather conditions.
- Prescribed burning is very effective* if done at appropriate temporal and spatial scales in large cells with at least 8% treated each year delivering at least 45% of fuel ≤ 6 years old, to appropriate standards of fuel reduction and in the right places (*where effective is: <1% per annum burnt by bushfire, acceptable residual risk, acceptable losses).
- The fuel reduction cells need to be large enough (c.a. 3km x 3km or ca. 1000ha) to ensure a sufficient area for the spread of a bushfire to be slowed and controlled and bounded by well-maintained roads or tracks to enable rapid access by fire fighters to mop up the edges.
- Prescribed burns should burn 70-90% of the area within cells to achieve balanced fire suppression and ecological outcomes. If too patchy, too small or narrow they will be less effective at slowing a bushfire, and burns that are too hot should be avoided as they can stimulate the regeneration of dense scrub.
- The purpose of fuel reduction burning is not to stop bushfires, but to assist with their safe suppression. Hot wildfires run into areas of low fuel, and the resulting reduced fire behaviour enabled fire fighters to gain the upper hand.
- With either direct, indirect or parallel attacks the likelihood of success are greater if the fire is burning slower and at a lower intensity because it is burning in young, light fuels.
- Fire intensity varies around the fire's perimeter and offering windows of opportunity for suppression, even under severe fire weather conditions. If fuel loads are low, this window of opportunity widens significantly. When fire weather conditions ease (and they always do at some point), if the fire is burning in young, light fuels, there is a larger window of opportunity for safe suppression, than if the fire is burning in old, heavy fuels.
- Containment work on the 'pressure' or 'danger flank' is more likely to succeed in young, low fuel situations when flank fire intensity is relatively low, even under severe weather conditions.
- Low-fuel areas are very important for indirect suppression strategies including back burning.
- Attempting to back burn in old heavy fuels is a slow, demanding, dangerous and risky.
- Water bombers have little effect on an intense forest fire, but can assist control of slower moving, lower intensity fires. (excerpt from Cameron 2020)

The best fire fighting is undertaken well before the fire even starts which means planning and preparation are essential.

It is important to remember that there is no single factor that will control mega bushfires only a combination of well executed measures will limited the physical, environmental and social damage these fires will do in the future.

The sections on the five phases of bushfires also includes where appropriate the recommendations from the NSW Bushfire Inquiry that may be of interest to the Council.

6.3 Preparation for Bushfires

Fire prevention and/or firefighting can be divided into several stages and probably the best definition is by the bushfire expert and former Bombala forester Dr Peter Moore[5] who suggests that there are five stages:

1. REVIEW – This includes analysis of the fire potential in the Council area, the identification of options for minimisation of the threat and the development of control measures. This includes an understanding of fire history (where fires have come from and why), cross border arrangements, development of strategic firebreaks, communications that will survive bushfires and consistency of communication and alert systems between emergency services and support agencies across the Council region. Consistency of equipment between fire agencies and farmers and landowners is also important, for example having common hose connections for quick coupling of fire-fighting systems.
2. RISK REDUCTION – involves focusing resources on the underlying causes of fires, ignition reduction (checking faulty power poles, community fire awareness etc), prescribed fuel reduction burning and planning for effective firefighting.
3. READINESS – Preparing to fight fires, which includes- knowledge of the conditions, accumulation of firefighting equipment and training of personnel (formal and informal), early warning systems and communications systems.
4. RESPONSE – Ensuring appropriate responses to fires; including fast containment and mopping up.
5. RECOVERY – Community welfare, disposal and clean-up of fire damaged building materials, rapid repair of infrastructure and restoration of fire-damaged forests which may include salvage harvesting and road and bridge repairs.

6.4 Review of Fire Preparedness

6.4.1 Fire History and Assets

While there have been numerous fires within the Council area this is the second time that a major bushfire has come from Victoria and burnt a significant area of pine plantations at Bombala. The Council is rightly concerned about fires coming from other areas and impacting on major assets within their local government area. Margules Groome remembers the comments of a Victorian Minister stating to the press and the Victorian community that –"these fires will not go away until we receive either 200mm of rainfall or the fires burn into NSW!". Understanding fire history should assist in developing plans to protect major industry assets like

[5] Dr Peter F Moore, Forestry Officer, Forest Fire Management & Disaster Risk Reduction, FAO-Forestry Department, Rome

plantations and processing facilities and the tourist areas like Kosciusko National Park and tourist facilities like Mt Selwyn Ski Resort. Understanding fire history should provide Council and other agencies to prepare for and prevent or minimise the prospect of catastrophic fires coming from these sources in the future.

Pine plantation managers have commented that they felt their plantations were not valued by the various fire and emergency services and were too ready to light back burns in their plantation assets.

The location and value of plantations to the local and regional economy must be understood and Recommendation 18 and 29 whereby the NSW Government will build a common database called the Digital Twin where all assets are identified and geo referenced so that they can be taken into account during fire control activities.

6.4.2 Communications

Communications are vital, not only during emergencies, but they are also critical to the viability of many rural and regional businesses who make a significant contribution to the local economy. Therefore, protecting communication assets must be a priority. Removing flammable fuels from around communication towers and considering additional measures for protecting them should be a priority.

There has been considerable comment around the efficacy of the NSW Rural Fires Service's "Fires Near Me App" in particular, its inability to show fires in Victoria. It was not providing real time information and it was slow to update on the status of fires. State based fire emergency systems tend to fail around the state borders and with the absence of national standards the Council may need to manage these inefficiencies though elevated communications with surrounding local government areas. In the context of the softwood plantation industry this would include Bega Valley Shire, East Gippsland Shire, Snowy Valleys Shire (Tumut Tumbarumba) and Queanbeyan Palarang Shire in the North.

Recommendations 58, 67 & 68 in the NSW Bushfire Inquiry suggest improvements to both cross border bushfire information and faster updates as technology improves including fire spread prediction maps. Recommendation 30 aims to minimise disruptions to Communication outages and remedies for backup solutions such as generators.

6.5 Risk reduction

6.5.1 Strategic Firebreaks and Vegetation Clearing

Developing strategic firebreaks in advance of the bushfire season will create potentially effective control lines for fire fighters to immediately utilise to halt the spread of a bushfire. The concept is to have a series of permanent fire breaks.

However, firebreak on their own is not enough and in a forested environment they can provide a false sense of safety they must be combined with fuel reduction strategies like prescribed burning.

Logically strategic firebreaks should be created in conjunction with access roads and using data from fire history will assist with the location of these firebreaks.

Firebreaks may be ineffective in the event of fast running fires, but they can be extremely effective in either flanking fires or halting a fire when weather conditions ease.

The firebreak below in Figure 6-3 between the natural forest and pine plantation along Coolangubra Forest Way is a typical traditional mineral earth firebreak. However, it could be improved by the removal of the heavy woody debris at the edge of forest, much of which appears to have come from the clearing of the firebreak. This debris is just increasing the heavy flammable fuel load near the edge of the firebreak which will threaten or compromise the value of the firebreak. Substantially thinning the standing forest would also improve the firebreak by reducing the risk of the forest carrying a crown fire to the edge of the road.

Visually, firebreaks like these are unattractive and the exposed soil is potentially erodible.

Removing heavy woody debris like tree root balls and piles of logs and branches has a double value. Firstly, it reduces the flammable fuel close to the edge of the firebreak and secondly it increases the landscape and amenity value of the firebreak which is important in a tourist region like the Monaro.

Figure 6-3
Traditional Mineral Earth Firebreak Coolangubra Forest Way

The following Figure 6-4 provides an alternative firebreak design where several trees are left on the break but only a grassy ground cover which makes for easy maintenance.

However, the break is only around 15 metres wide and in Margules Groome's opinion this is too narrow for an effective firebreak, particularly as there is heavy fuels in the Ti-tree to the left of the photograph which would contribute to a crown fire coming to the edge of the road and creating a dangerous fire edge for firefighters and traffic.

In Margules Groome's opinion a more effective strategic fire break would be to extend this grassy verge by thinning of the forest and clearing or mulching the shrub layer for approximately 100 metres either side of the road. Interestingly creating a 100m grassy verge with sparse trees would represent something close to the Indigenous landscape as reported by Professor Bill Gammage in his book 'The Biggest Estate on Earth – how Aborigines made Australia' where early settlers commented on the landscape looking like an English noblemans park with sparse trees and grassy understoreys. Sparse trees meant only 20 to 30 trees per hectare or trees at least 10 metres or more apart.

Ultimately the verge would be native grasses and specimen and habitat trees could be retained.

Figure 6-4
Grassy verge Ben Boyd National Park – Pambula NSW

As mentioned, the reason for creating this grassy verge is so that when a fire does pass, it limits the potential for the bushfire to crown close to the road making it unsafe for fire fighters and traffic.

Visually this type of break is more attractive than the mineral soil firebreak and the minimum grass cover protects the soil from erosion and would be easy to control if it catches fire.

Without the shrub layer it is almost impossible for a crown fire to occur or be sustained.

The second reason for creating this grassy verge is for safety post the fire. The following Figure 6-5 illustrates the ongoing traffic hazard of fire killed and/or damaged trees close to the road. Dead and damaged trees will continue to fall over this road and unless they are cleared now, they will be an ongoing traffic hazard for many years with an ongoing cost to Council to remove them. Even if the trees remain standing the small branches and twigs that fall onto the roadway which is evident in the photo below are a traffic hazard.

The third reason for creating a grassy verge with wide spaced trees is that it limits the potential for the road to be closed for any length of time following a bushfire. The Princes Highway south of Eden was closed for 7 weeks which severely depressed the economy of the Far South Coast during their busiest period and caused significant economic hardship for many businesses.

Figure 6-5
Fire Killed and Damaged Tree Hazards – Mt Darragh Road

Recommendation 28 in the NSW Bushfire Inquiry requests the consideration of subsidies for private property owners to undertake site mitigation works to reduce bushfire hazards and ensure that vegetation clearing laws are clear and easy to navigate.

Reducing the intensity of bushfire close to roads will also limit the damage to road infrastructure like road signs, guide posts etc as shown in Figure 6-6 below.

Figure 6-6
Loss of roadside infrastructure and post fire regen rebuilding fire threat!

In the above photos the dead and terminally damaged trees on either side of the road could be harvested for firewood by one of the local hardwood harvesting contactors such as Wilton Logging, Nungatta Station or Beveridges which will reduce the cost of clearing these trees and contribute to the local fuelwood market.

Note the heavy fuels just to the left of the photo in Figure 6-6, removal of this debris will reduce the intensity of any future fire. Within this photo there is evidence of significant regeneration of firstly pioneer plants like everlasting daisy's (helichrysum sp) but woody weeds will follow and without any control will create a significant fire threat in the near future.

Importantly the creation of a grassy verge as a strategic firebreak is a 'once only' operation and after the verge is created it only requires periodic slashing or preferably mulching to keep it maintained.

As mentioned above thinning and clearing the roadside is more likely to improve the tourist amenity of the forest close to the road and will not detract from the scenic or natural features of the forest drive by motorists.

The Victorian government is now clearing the roadside verges along the Princes highway south of the New South Wales border as shown below Figure 6-7

Recommendation 32 from the NSW Bushfire Inquiry states that local government, Roads for NSW and the NSWRFS develop strategies around roadside vegetation management to include bushfire control, safety and maintenance of visual and biodiversity values.

Figure 6-7
Clearing Roadside Verges on the Princes Highway nr Bemm River East Gippsland

6.5.2 Prescribed Fuel Reduction Burning

There were many comments to the NSW Bushfire enquiry that not enough prescribed burning within the forests is being undertaken.

The use of mechanical hazard reduction (such as mulching in conjunction with thinning and pruning) as discussed above is also effective in reducing fire potential and may be more appropriate in areas where smoke could be a problem and/or the sensitive sites need total protection from fire.

Undertaking prescribed fuel reduction burning in forests around valuable assets like plantations, farms and farm buildings, homes and community buildings will increase their ease of protection reduce the potential for crown fires to impact these assets.

Experienced Western Australia fire researchers, Dr Neil Burrows and Mr Rick Sneeuwjagt made a series of comments in a Sydney Morning Herald article on the 28th of January on why fuel reduction burning is important.

The purpose of a fuel-reduction burning program is not to stop bushfires, but to assist with their safe suppression.

In mature forests, crown fires cannot be sustained if the surface and near surface fuels are at low levels as a result of regular fuel-reduction burning

Experienced land managers, firefighters, and bushfire scientists are in no doubt about this. The scientific, experiential and historical evidence all demonstrate that prescribed burning, done properly, is highly effective at mitigating the bushfire threat, and assists with the control of fires even under severe weather conditions.

The value of prescribed burning is evident in the picture below taken by well-known Victorian Forester Garry Squires near Orbost during the bushfires this summer.

The bushfire was burning as a crown fire on the right of the photo before gradually extinguishing itself in the forest on the left hand side that was prescribed burnt 9 months earlier to reduce fuel loads.

The crown fire basically extinguished itself within 20 to 30 metres of entering the forest that had been subjected to a prescribed fuel reduction burn. As a result, there was no need for any massive suppression effort from ground crews or expensive aerial water bombers. It is a clear indication of the value of forest fuel management.

Figure 6-8
Value of Prescribed Burning to halt major Bushfires

Photo Garry Squires Orbost – January 2020

Recommendations 19, 20 & 21 in the NSW Bushfire Inquiry are dedicated to optimising hazard reduction burning (prescribed burning) and Recommendations 25 and 26 relate to accepting and increasing the level of cultural indigenous approach to hazard reduction burning.

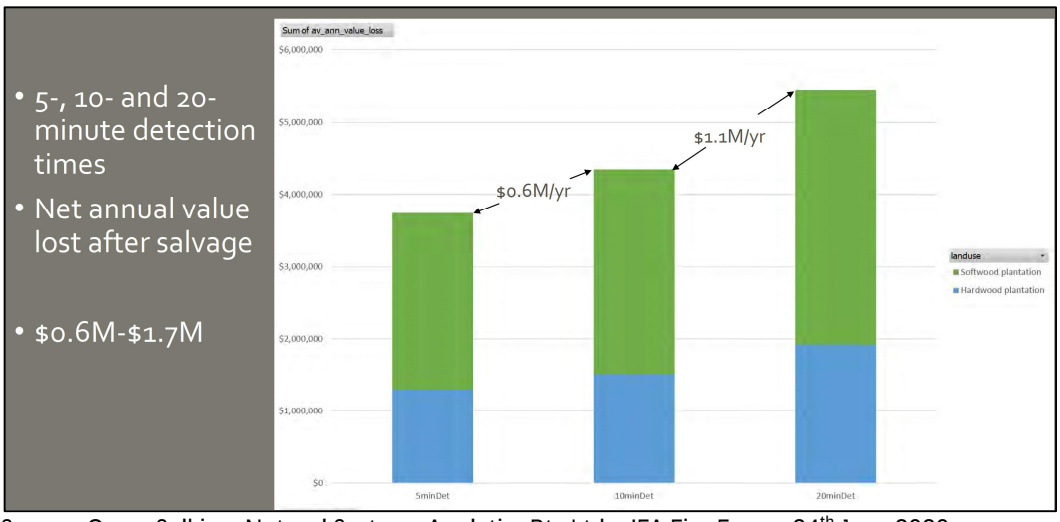
6.6 Readiness

6.6.1 Early detection

The value of early detection and fast attack to control major bushfires before they become too big has been well known for many years

The following Figure 6-9 illustrates how the detection time is critically important to reduce the loss of plantations. The difference between a 5 minute detection time and 20 minute detection time in plantations is $1.7 million.

Figure 6-9
Relationship of Detection time to Value Loss in Plantations



Source: Owen Salkin – Natural Systems Analytics Pty Ltd – IFA Fire Forum 24th June 2020.

There has been a strategy within some land management agencies of "let nature take its course" by not attempting to extinguish fires in certain parts of Australia. In Margules Groome's opinion this is an extremely dangerous and inhumane approach to fire management as these unattended bushfires almost inevitably burn towards communities as massive uncontrollable fires with catastrophic results for humans, biodiversity and public and private property. The bushfires that entered the suburbs of Canberra in 2003 was a result of slow detection and inaction to extinguish when the fires first started.

There are new technologies such as a group called National Fire Surveillance (NFS) that utilise specially equipped Cessna Caravan aeroplanes equipped with heat sensing technology, fire spotting and communications technology and 1000 litres of fire retardant that can detect fires very soon after they start and by using fire retardant aim to halt the spread of a new fire until more firefighting resources can be deployed.

All bushfires must be extinguished as fast as possible after they are detected.

6.6.2 Farm Fire Units

Many landowners wish to protect their property in the event of bushfire and this is understandable. It was mentioned that farm fire units played an invaluable role in the Kangaroo Island bushfire when resources for the normal fire fighting and emergency services were not available.

Recommendation 38 discusses the issue of protective clothing for private property owners but not how farm fire units could be effectively utilised to support property protection during a mega bushfire.

In Margules Groomes opinion and personal experience there needs to be number initiatives that could easily develop farm fire units into an extremely effective support service to the NSW RFS and other emergency services and this could include:

- Basic fire fighter training
- Provision of Personal Protective Clothing
- Standardised (& ideally subsidised) hose fittings, pump and tanks
- A simple communications system for Farm Fire Units to communicate with the RFS and others

6.6.3 Multiple strategies

Margules Groome has concerns that there is an increasing focus on suppression rather than prevention. Particularly given some comments from retired fire service commissioners and retired military personnel that more aerial fire attack vehicles are required. This is a concern as it will raise unrealistic expectations that every house can be saved, or any fire stopped in a major bushfire. In addition, they are extremely expensive to operate.

Burrows and Sneeuwjagt make the comment in the article referred to earlier that:

Appliances such as water bombers have little effect on an intense forest fire, but can assist to control slower moving, lower intensity fires.

The Council is also aware from tragic circumstances that aerial bombers fly with considerable risk and apart from the tragic accident of the water bomber at Peak View there were two other helicopter crashes last summer, one in Ben Boyd dam near Eden and another in Queensland.

In addition, Margules Groome witnessed the fire-fighting helicopters were grounded at Merimbula Airport for many days due to smoke haze and as a result they could not assist ground crews and were largely ineffective during the peak of the fire.

Council should consider requesting the State and Federal Government to assist with the construction of strategic firebreaks and fuel reduction in lieu of some of the budget for aerial firefighting capacity.

A quote from a paper presented by Murray Dudfield to a joint conference of the Australia and New Zealand Institute of Foresters in Christchurch in August 2019 titled - Fire Management in the Forest and Rural Landscape – at what cost? Questioned the value of helicopters in mega fires with the following quote.

> From a scientific perspective, it is nearly impossible to determine what kind of effect a helicopter has on a large fire, if it has one at all- Matt Plucinski [6]"

In summary, there is no single solution to control serious fires in the landscape it requires a combination of fuel management, fast initial attack, fire crew training strategically planned fire breaks and great communications and co-ordination from all land managers and emergency services.

[6] Matt Plucinski is a research scientist on Bushfire Suppression at CSIRO

6.6.4 Essential services plan

In a major Bushfire there should be a range of things the Council can quickly implement as part of an emergency plan.

There are more qualified emergency services organisations than Margules Groome, but the following are some of the obvious issues that need some attention:

- Communications – how can communications be protected and maintained and if lost, how can they be quickly re-instated. Black spots like the Rockton area need immediate attention and support for improving these is one of the recommendations of the NSW Bushfire Inquiry.
- Road access – maintaining road access is critical for both evacuees and emergency vehicles plus the delivery of essential supplies like fuel for emergency vehicles. Margules Groome witnessed panic buying of fuel on the far south coast in early January which could have become a major problem for the operation of emergency vehicles. A limit on the amount of fuel (i.e. enough to drive to the nearest safe place e.g Canberra) that evacuees could buy would potentially preserve fuel supplies for fire-fighting and local support services.
- Directory of services – develop and maintain a directory of critical services like generators, food and water supplies and heavy equipment and licenced operators – who has these services and where are they located. Recommendation

6.7 Recovery

The planning for Bushire recovery should be standard for local government areas. It can be done well in advance of any bushfire for example:

- Property clean up, how will it be done, and by whom and where will the waste be disposed of. There has been considerable and probably justifiable criticism of the time it took to clean up burnt houses in the Bega Valley which was nearly 4 months after the fire before any serious action was taken. This is too long and Council can plan now for issues like:
    - The process for approving clean ups of burnt buildings
    - Who has capacity within the Shire to do the clean up
    - Where will waste be disposed of – especially hazardous waste, like asbestos.
- Charitable funds – donations following the bushfires was amazing and seemed to be extremely generous, but the delivery of donated funds did not appear to be well targeted. The Council may like to consider establishing its own charitable Disaster Relief Fund that is designed to support the council region in the event of a disaster.
- Initial Action plan – by developing an emergency action plan well in advance of a major bushfire means support for people affected can start the day after the fire passes.

7 BOMBALA FOREST BUSINESS OPPORTUNITIES AND CHALLENGES

Bombala is one of the smaller softwood plantation regions of Australia representing less than 5% of the national estate which means it has not been able to attract the level of value adding that occurs in regions like Tumut Tumbarumba and Bathurst and Oberon. However, Bombala has several positive attributes in terms of its location between major tourist locations in the Snowy Mountains and on the Sapphire Coast being only an hour's drive from each.

The future challenges and opportunities are outlined in the following sections.

7.1 Future Challenges

There are several current challenges:

- Sourcing sufficient sawlog supply – For Dongwha to continue to operate it needs a certain volume of sawlog intake to cover its costs of production and remain viable. The minimum sawlog volume is 320 thousand cubic metres and Dongwha are currently expecting shortfalls in supply especially during the 10 years from 2036. Their options are to source a supply of logs from another region or reconfigure their sawmill to allow them to operate on a lower log volume.
- Attracting skilled staff – is a problem not only for Dongwha but contractors and businesses as well. TAFE NSW is proposing to develop a forestry VET course in 2021 which may assist this problem.
- Accommodation in Bombala – good houses for rent are scarce and this is having an impact on attracting good staff. Theoretically private investors in affordable housing could be attracted to develop more accommodation in the town.
- Town amenities – the amenities within the town are minimal which means some workers prefer to live on the coast at Merimbula or Tura Beach and even Canberra where school options and other facilities are better. The amenities will only come with a diversified economy.
- Plantation estate size & commitments – the plantation estate in Bombala is small by comparison to Tumut and Bathurst the two largest softwood plantation estates in NSW. This smaller size and the contractual commitments of pulplogs to Visy in Tumut is limiting its potential to expand. Developing a future plantation development plan should assist in the orderly expansion of the estate and ensure it is attractive to new processing investment.
- Truck traffic – all trucks driving north from the Dongwha mill and the plantations carrying pulplogs to Visy must travel through the main street of Bombala, which detracts from the streetscape amenity of the town. For example, there are minimal al fresco café/dining opportunities for travellers and locals. Periodic (5 yearly) log transport plans should be developed to

assist with planning road upgrades and transport infrastructure. These log transport plans are common in other plantation regions in Australia.

- Awareness of the industry – while the softwood plantations have been around Bombala for many years the value of the industry is taken for granted by many (except those businesses directly involved in it). The Council could assist in promoting the industry as part of the diversity of the Council area.
- Protecting the plantation estate – as mentioned previously the Bombala plantations have been impacted badly by fire on two occasions. Greater focus needs to be given to protecting the plantations in the future as it not only impacts on business viability but also heightens the risk for plantation investors. The development of strategic firebreaks and crown fire free zones should assist this along with co-ordinated prescribed burning in the forests around plantations. Ensuring that emergency services are also aware of the economic value of the plantations so they can focus efforts on protecting them along with other businesses.

7.2 Future Opportunities

- Strong demand for softwood logs – there is a strong demand for softwood sawntimber within Australia and in export markets in Asia. Bombala has access to both domestic processing at Dongwha and export markets via Pentarch/ANWE at Eden. The outlook is positive as assessments by the Australian Forest Products Association suggest that another 400 thousand hectares of new softwood plantations are required to meet future domestic demand for softwood sawntimber and panelboards mostly for new residential housing. This outlook provides some market confidence to any prospective plantation growers.
- Expand the plantation estate – there is marginal agricultural land around Bombala that could be developed for softwood plantations to expand the total plantation estate which will assist in attracting more processing investment. In addition, some of the existing plantations may not remain after final harvest. Ideally retaining or swapping land to ensure the plantation estate does not diminish over time will be important.
- Create a Regional Forestry Hub – the Commonwealth Government's National Forest Industries Plan -Growing a Better Australia – A Billion Trees for Jobs and Growth - has created a series of forestry hubs around the country to focus on the establishment of 400 thousand hectares of new plantations. According to the CEO of the Australian Forest Products Association (AFPA) Mr Ross Hampton the hubs will help ensure the 'right trees are planted in the right places' and that the Government's plan specifies that farm forestry will play a significant role in achieving the goals of growing one billion new trees. Hubs have already been established in Tasmania, South West Western Australia, Western Victoria and South East South Australia (aka. The Green Triangle), North East NSW, the South West

Slopes of NSW (Tumut & Tumbarumba) South East and Far North Qld. AFPA have been actively campaigning for a regional forestry hub in south east NSW which is essentially the Cooma Monaro Regional Council and Bega Valley Shire Council area.

- Farm Forestry – following from the Hub concept above the Council could consider a council wide farm forestry plan, particularly to investigate barriers and opportunities around local state government planning policies. Farm Forestry has not been a success in Australia and the reason is historic. In Margules Groome's opinion the NSW Government has neither the social licence nor the capital to invest in new plantations but they could assist via policy incentives (possibly aligned with the Commonwealth government) to allow farmers to develop plantations either independently or in joint ventures with softwood processors to diversify the production on their farms.
- New processing – there are limited opportunities for new processing, as most of the current harvest is committed to either Dongwha or Visy in Tumut. Surplus logs that do not meet the specifications of Dongwha are currently exported from Eden. The volumes that are exported are insufficient to construct another processing plant but Dongwha is considering some value adding options of their current production that may provide some opportunities. The opportunity to expand the current processing from sawmilling is limited. There may be opportunities for Biomass as there is some surplus sawdust which is currently sent to garden products and there is probably additional stem volume that is currently left behind in the forest that could be processed, however this has not been quantified.
- TAFE NSW Training – as mentioned TAFE NSW is initiating a vocational education and training course for forestry and forest operators in southern NSW. There may be an opportunity to establish a TAFE training campus at Bombala to facilitate and encourage more young people to take up careers within the forest industry.
- Developing a Circular Economy – wood is a renewable and relatively easy product to recycle. Paper recycling is well understood but waste wood like old single use pallets and wood waste from retail yards (like Mitre 10, H Hardware etc) frame and truss and home builders can be recycled into panel board products like particle board.

7.2.1 Increase awareness

- Initiate a Council wide 'Wood Encouragement Policy' – the well-known environmental non-government organisation Planet Ark runs a Wood Encouragement Program called Make it Wood for local government which has been adopted by many councils around Australia and two State Governments, Tasmania and Western Australia. A Wood Encouragement Policy means the Council agrees that where feasible, responsibly sourced

wood should be considered, as the primary construction material in all public new-build and refurbishment projects. According to Planet Ark their 'Make It Wood' program aims to encourage the increased use of responsibly sourced wood as a building material and a main choice for furniture, toys, and other household items. Responsibly sourced, certified wood is the only building material that helps tackle climate change; it's renewable, it stores carbon and it consumes minimal energy in its production. Planet Ark suggest that there is a growing awareness of the importance of connecting buildings with the natural world, and how the use of biophilic design and using natural elements like wood and indoor plants can bring the benefits of nature indoors. Planet Ark's report Wood – Nature Inspired Design outlines the importance of connecting buildings with the natural world and how biophilic design can benefit human health and wellbeing[7]

- Establish a Forestry Working Group – establishing a Forestry Working Group like the Softwoods Working Group that operates on the South West Slopes of NSW to promote the local industry and ensure it receives the support it needs to function effectively. This group would cover the industry within the council area and ideally cover Bega Valley Shire as well (Queanbeyan Palarang) could also join but its plantation estate is relatively small) there would also be some logic in including East Gippsland due to the border protection issues. This group would allow the Council to interact with the main industry stakeholders and monitor issues like new plantation development, infrastructure and transport requirements and fire protection. The group should also be able to provide basic data requirements for Council to advocating to the State or Commonwealth Government for project funds.

7.2.2 Increase the Amenity of Bombala

As mentioned, one of the challenges facing Bombala is the decline in businesses within the town. For example, in 1980's there were three Banks and two Butchers shops, three Supermarkets and three hotels and two clubs. Now there is only one Bank with limited opening times, one Butcher, one Supermarket, one hotel and two clubs. The town is gradually hollowing out and is reaching a tipping point where it is extremely difficult to attract people to live there. To make a point one car dealer mentioned to Margules Groome that in the 1980's he would budget to sell 60 cars per year and now he would be lucky to sell 6!

The forest industry is limited in its ability to attract new businesses and given the impact of the bushfires earlier this year it is likely that the industry will go through a small downturn after the damaged plantations have been salvaged and replanted.

Forestry is a business of time.

[7] https://makeitwood.org/wep/

It takes time to develop the resource base and attract the processing industry but once established it should remain and grow in perpetuity as long as it can be protected from fire and pests.

Forestry also provides a significant diversification from the local farming operations.

The Chamber of Commerce is a strong supporter of developing the rail trail for cyclists from Bombala to Canberra. This comment may seem out of place in a report on the softwood industry in Bombala but Margules Groome has experience in two projects that the Council may like to reflect on.

1. Bombala Bicentennial Gardens – Rob de Fégely was the project manager to build these gardens starting in 1985 when he began consulting with the local community groups to engage their support to construct the gardens. Initial reactions were negative, comments that 'it would never last' as the trees in the main street which had been planted a couple of years earlier had all been vandalised. The main street trees were ultimately removed. Other comments suggested that 'the whole garden would be lost in the next flood' reflecting on the experience of the 1971 flood. However, after making a start to illustrate what was happening and some persistent consultation to gather support from community groups within the town the project started. The key to success was these community groups were given a recognisable role in planting the gardens. Now 32 years later the garden is a feature of the town and caters for both locals and tourists as a place of easy relaxation and visual amenity. The key to this development was to believe in the vision of the initial promoters of the idea and not let the negative views defeat the project.
2. Blue Derby Mountain Trail in North West Tasmania – this is story of a towns revival that could be replicated in Bombala. In 2012, this small former tin mining town in north west Tasmania was dying, houses were being almost given away and businesses closing or closed. Some chance meetings of Mountain Bikers found the slopes and soils around Derby would be ideal for mountain biking and importantly the land was managed by Forestry Tasmania (now Sustainable Timber Tasmania) which allows multiple uses. If it had been National Park the project would have been much harder to develop if ever, but given it was on permanent timber production zone land (the name given to state owned production forest land in Tasmania) it was possible to construct. Four years later it was opened in 2016 with about 30 kilometres of a planned 80 km of trails opened. In 2019 over 30 thousand riders visited Derby and they generally stay 3 to 4 nights according to Greg Howard the local Mayor of Dorset Council. If you assume, they spend $200 per day on food and accommodation that is $6 million delivered to their economy. Howard suggest that the trails have brought about $15 to 18 million into the North East of the State every year as riders stay on and visit other attractions. Derby is now undergoing a major renovation and/or transition with old buildings restored and new cafes and accommodation under construction and it created 100 new jobs that have been taken up by local people in Derby, all in less than a decade. The benefit of building a rail

trail from Bombala to Canberra is that it traverses the whole Council region and rail trail riders tend to attract retirees as well as enthusiastic riders which would generally mean a higher capacity to pay and the trail would be unique in Australia and tap the very large Canberra tourism market. All Villages along the rail trail would benefit. The benefit for Bombala is that it would add diversity to their economy and the older and/or closed hotels could be refurbished for accommodation and restaurants. The softwood plantation will grow over time but it may be too slow to maintain the critical services within the town so some diversity in the local economy is urgently needed. The re-opening and constructing the rail line from Canberra to Eden is not feasible according to recent ABC reports and so the rail trail does not have any serious alternatives.

7.3 Hardwood

While this report is focussed on the softwood industry hardwood should not be forgotten. Hardwood sawmills were the main forest processing industry in the Council region in the 1980's and slowly over time this industry has been replaced by softwood. The greatest change has been shift by hardwood from commodity house framing products to more specialty products like flooring and panelling. Another sector that is often forgotten is firewood. The increase in al fresco dining, fire pits and backyard pizza ovens along with slow combustion heating and open fires in high end tourist accommodation has maintained a demand for quality hardwood firewood. There are several companies operating within the Bombala region and from the south coast including the Wilton Woodyard, Nungatta Station, Beveridges and Sapphire Coast Tree Services all providing firewood into the Council area. Demand is relatively strong particularly locally but also from Canberra.

While access to the public forests managed by Forestry Corporation of NSW is getting harder, the privately owned natural forests could provide more opportunities, particularly as part of a thinning program or forest protection to remove excess debris. However, it is important that it is controlled and all harvesting on private land should be managed under a Private Native Forestry Plan that has been authorised by Local Land Services.

For background Forestry Corporation of New South Wales manages a forest estate of around 1.8 million hectares which is small compared to the privately owned natural forest estate which is over four times larger at 7.4 million hectares. Much of this privately owned natural forest is relatively unmanaged and so provides an opportunity for increased conservation, protection and production depending on the owners intentions. But it is important that all operations within Private Native Forests are professionally controlled and managed for both safety and conservation reasons.

8 STRATEGIC RECOMMENDATIONS

Margules Groome has consulted with all the major forest industries and businesses that operate within and around the softwood plantations of Bombala to provide some strategic recommendations around the following issues:

8.1 Short Term Recommendations 1 to 5 years

1. Lobby for Dongwha wood supply – Dongwha is the major employer in Bombala with around 130 jobs and its business is under threat due to the inability of Forestry Corporation to supply the volume of sawlogs it needs to remain viable. There are some other options, but they are not secured by Dongwha at the moment, and may need some Council assistance.
2. Establish a South East Forestry Working Group - to improve communications between the Bombala (& Eden) forest industry and the Council and this can include topics such as transport infrastructure, planning guidelines for new plantations and fire protection and communications around the state border. This working group can develop with Council and the local community a long-term forestry plan. There is logic in this group including Bega Valley and East Gippsland Shires and potentially Queanbeyan Palarang.
3. Lobby the Commonwealth Government for the South East region to become a Regional Forestry Hub – to attract Federal funding for the region. There are some policy benefits which come with the creation of an industry hub such as carbon credits for commercial plantations. One project that a Hub could fund would be a region wide five year Transport and Road Infrastructure Plan.
4. South East Forestry and Agriculture Land Use Plan – the development of softwood plantations by Willmott Forests in the late 1990's and early 2000's on cleared farmland was contentious and divided the community. Developing additional plantations will reignite these tensions unless there is a level of planning about where plantations should and should not be established. Defining what is important to the local community and the industry will be important and where possible ensuring planning regulations do not create perverse outcomes. While it is impossible to dictate to the land market, defining some form of intent in relation to the integration of forestry and farming would be beneficial. This plan could be developed in conjunction with Bega Valley Shire. This plan should investigate some potential plantation estate size options to supply processing options such as a panelboard plant based on forecasts for supply and demand.
5. Commit to a Planet Ark's Wood Encouragement Policy –this program is more about awareness for Council rather than driving demand for wood. Comments from other Councils that have committed to this program have found the program to be inspiring to learn how wood is being used around the world and the contribution it can make to their Council area. Considering the Council is responsible for a major plantation program within

their region and the many wood inspired buildings in the mountains and Shire in general, this program would make sense.

6. Border Fire Management Committee – following the 1983 bushfires that destroyed over 6 thousand hectares a Border Fire Management Committee was established to improve communications and planning across the Victorian and NSW state Border. It appears that this committee has lapsed or diminished but given the losses experienced this summer, this committee is needed more than ever.
7. TAFE NSW Forestry Training – finding skilled employees is a challenge that TAFE NSW has recognised and they are in the process of hiring part time teachers to develop a VET Forestry Course and Council should work with them to ensure they have appropriate facilities (such as the Bombala Primary School) to operate from.
8. Construct the Rail Trail from Bombala to Canberra – this recommendation is provided to create diversity in the economy and increase the amenity of Bombala to make it more attractive for forestry workers to come and live in the town. Getting skilled forestry workers to come to Bombala to live is a challenge and an attraction like this may create the diversity in the economy to revive the town. Building the trail to the coast would make a significant tourist connection from the sea to the nations capital.
9. Consider the development of a Council wide Circular Economy – the circular economy is based on zero waste and would require all industries to work together to determine how was can be utilised or re-purposed rather than going to landfill.

8.2 Medium Term Recommendations 5 to 10 years

10. Plantation estate expansion – a slow and steady expansion of a plantation resource is generally more acceptable in terms of community acceptance, roading infrastructure and industry development than a massive increase in the plantation estate over a short period.
11. Biomass – is increasing in its importance as one of the renewable energy options and Dongwha has surplus sawdust that could be utilised. In addition, there is an unquantified amount of stemwood in the softwood and hardwood plantations that remain after harvesting that could also be utilised for steam production for heating, especially public buildings like the hospital, Currawarna the schools etc. Biomass heating plants are generally cheaper than bottled gas and around the same as natural gas but this depends on gas and electricity prices.
12. Upgrade the South East Forestry Plan – this upgrade will build on the plan developed above.

8.3 Long term recommendations 10 plus years

13. New Industry options – within 10 years the replanted plantations following the bushfire will be nearing first thinning which will present new processing opportunities. Ideally these should be considered within the context of the outlook for demand and the opportunity for a new processing plant in Bombala.

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